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THE LOGIC OF APULEIUS

BY

DAVID LONDEY AND CARMEN JOHANSON

E.J. BRILL

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DAVID LONDEY AND CARMEN JOHANSON

THE LOGIC OF APULEIUS

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Including a complete Latin text and English translation
of the Peri Hermeneias of Apuleius of Madaura

BY

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PREFACE

Although this little book was conceived in the stratosphere—in an airliner somewhere between Bangkok and Bahrain—our aim in writing it is quite down-to-earth. We aim to make the small textbook on formal logic, ascribed to Apuleius of Madaura, more accessible both to logicians who do not have much Latin and to classicists who do not have much Logic. We hope, of course, that it may also be of some interest and use to those well-equipped on both sides. Apuleius's book seems to us to deserve more detailed study than it has received in recent times, both with a view to forming a more definitive assessment of its place in the history of logic and to cast light on the Latinisation of Greek thought in the later classical period. By supplying a translation together with enough introductory material to ease the approach to the text, we hope to stimulate further work on what has been a somewhat neglected corner of the history of logic as well as of Apuleian studies.

This book is the outcome of collaboration between a philosopher and a classicist, but every part of it bears the impress of both of us and responsibility for it is shared equally. Our collaboration is a mirror of a belief that the proper study of an ancient philosophical text requires the cooperative attention of both philosophers and classicists.

Our thanks are due to B.G. Teubner GmbH for permitting us to reproduce the Latin text in Part II, along with our translation. We must also thank the editor of *Apeiron* for permission to use material from Carmen Johanson's "Was the magician of Madaura a logician?" (*Apeiron*, Vol. XVII, 1983), and the editor and publishers of *Phronesis* for kindly allowing us to use material from our "Apuleius and the Square of Opposition" (*Phronesis*, Vol. XXIX, 1984).

The writing of this book has been supported in part by a grant from the Australian Research Grants Scheme and its publication assisted by a generous grant from the University of New England Publications Committee. Our thanks are due to both these bodies. We are also indebted to Professor L.M. de Rijk for his very helpful comments and criticisms; to Mr J.G. Deahl for constant editorial guidance; and to Mrs Cheryl Chant who typed an earlier version most expeditiously. However, our greatest debt is to Ann Londey for her unflagging encouragement from the beginning, and her patience with untold hours of talk about 'the P.H.'—and it is to Ann that this book is dedicated.

PART I

INTRODUCTION

CHAPTER ONE

THE *PERI HERMENEIAS* AND THIS BOOK

This chapter is intended to give a preliminary and general characterisation of Apuleius's little book on logic, which will be filled out in the succeeding chapters, and to indicate the aims that have guided us in writing this book and determined its scope. We shall also make some preliminary remarks on the translation which appears in Part II.

Introducing the Peri Hermeneias

Although there are numerous logical remarks and short discussions of logical topics to be found in earlier Latin writers, the oldest Latin work which is sufficiently connected and comprehensive to count as a treatise on formal logic is the ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ attributed to Lucius Apuleius of Madaura, who is best known to modern readers as the author of *The Golden Ass*. Although this attribution, which will be discussed in Chapter 2, has been disputed, there is no real doubt that the work dates from the second century A.D. Its general character is that of a short handbook of formal logic, dealing quite systematically with the theory of the assertoric syllogism. The title, which we shall hereafter transliterate as *Peri Hermeneias*, is cited by some writers in its Latin translation, *De Interpretatione*, although the manuscripts carry the Greek title or its transliteration.

Apart from the fact that it is the earliest Latin work of its kind to have come down to us, the *Peri Hermeneias* deserves a definite place in the history of logic, both as showing us something of the state of formal logic in its period and as an important link in the chain of transmission of the logical thought of classical Greece to the medieval Latin West. The latter point has been dealt with quite thoroughly by Sullivan[1] in the only major modern study of the *Peri Hermeneias*, and we shall treat it only briefly a little later in this chapter.

It is far too easy to dismiss works like the *Peri Hermeneias* as being merely handbooks, but this one is at least written by a man well-schooled in Greek logic and not without a significant capacity for critical and original thought in logic. Nevertheless, it must be admitted that modern opinion has been divided, not only on the question of its authorship, but

[1] Mark W. Sullivan, *Apuleian Logic—the nature, sources, and influence of Apuleius's Peri Hermeneias*, Amsterdam 1967.

also on the quality of the work and the capacities of its author. On the whole, Apuleian scholars have tended either to ignore it, or to think that it was not written by Apuleius, or to regard both its style and content as dull and uninteresting. Elizabeth Haight,[2] for example, does not regard the work as genuinely Apuleian. James Tatum, on the other hand, appears to regard it as Apuleian, but, in the course of a general denigration of the philosophical writings of Apuleius, dismisses the *Peri Hermeneias* with the single remark:

> .... *On Interpretation* is an exposition in Greek [sic] of Aristotelian logic.[3]

Historians of logic have, perhaps predictably, found the work more interesting and more deserving of attention. Here we may mention I. M. Bocheński, who in 1951 described it as seeming "to be of great interest" and as worthy of further research.[4] The study by Sullivan, mentioned above, was written at least partly in response to Bocheński's estimate of the importance of the *Peri Hermeneias*, and the same may be said of the present work. For despite the scope and importance of Sullivan's book, much more needs to be done before it is possible to make an accurate assessment of the place of the *Peri Hermeneias* in the history of logic. In short, the content of the work needs further detailed study to illuminate the logical thought of its author and its period. This study will, ideally, be carried on by both classicists and historians of logic; for only that type of two-pronged approach, linking the language and the content of the work, will shed proper light on the details of Apuleius's thought and on the process of the Latinisation of Greek logic.

The principal subject of the *Peri Hermeneias* is the formal logic of subject-predicate propositions—including their classification and their logical relations with one another, and the theory of the assertoric syllogism. Apuleius is therefore looking back to the first real development of formal logic at the hands of Aristotle, even though the matter of Aristotelian logic is often handled by Apuleius in ways which may well be original to him. That there are differences between the Aristotelian and Apuleian treatments is hardly surprising, since half a millennium had elapsed and Apuleius shows that he was not unacquainted with the post-Aristotelian developments in logic by both the Stoics and the later Peripatetics. But there is also enough internal evidence in the *Peri Hermeneias* itself to show that Apuleius had considerable direct acquaint-

[2] Elizabeth H. Haight, *Apuleius and His Influence*, New York 1963.
[3] James Tatum, *Apuleius and 'The Golden Ass'*, Ithaca 1979, p.131, n.23.
[4] I.M. Bocheński, *Ancient Formal Logic*, Amsterdam 1951, pp.7 and 104.

ance with Aristotle's own logical works, and that he was concerned to be faithful to Aristotle in spirit, even when his treatment is superficially very different.

In Chapter 3 we shall describe some of the logical background which dates from the great days of invention in ancient formal logic. Those days were over by the time the *Peri Hermeneias* was written in the second century A.D. Its period is one in which logical writings took the form of commentaries and handbooks, although we are still far from being in a position to form a definitive estimate of the intrinsic worth of these works. However, it is quite clear that one must beware of dismissing them simply because they do not break new ground on a large scale, or of categorising them as being of interest only to the extent that they preserve for us otherwise lost gems from the earlier period. However 'second-hand' these lesser works may be, they may yet make advances on smaller points of logical theory, or in the presentation of previously known material, or in criticism of greater authors. If a work does make advances of this kind, we may well have to judge it to be worthwhile and important among the works of its own period and as an item in the history of logic. Such a genuinely historical judgement is difficult to reach, and, as indicated above, we are not yet in a position to make it about the *Peri Hermeneias*.

It is quite clear that a logical work may have an important historical place because of its role in the transmission of the thought of one era to the students of logic in another. The *Peri Hermeneias* has informed modern scholars of a few otherwise unknown items, mainly about Stoic logic. But its most important role of this kind was as a vehicle for the transmission of Greek logic to the logicians of the Middle Ages and as an important formative influence on at least the earlier period of medieval logic. [In Chapter VI of his *Apuleian Logic*, Sullivan presents substantial and detailed evidence for these claims.] It is not merely that the *Peri Hermeneias* made a certain amount of logical theory available to the medievals. It also seems to have been regarded as a useful aid to understanding some of the few texts of Aristotle that were available—as is indicated by the delightful anecdote, reported by Sullivan, of the tenth century copyist of Aristotle's *De Interpretatione*, who noted on his manuscript:

> Here ends Aristotle's book *Peri Hermeneias*, on the obscurity of which not only the double commentary of Boethius but also the very useful little book of Apuleius of Madaura casts the greatest light.[5]

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[5] Sullivan, *op. cit.*, p.191.

The Aim and Scope of This Book

We have already stressed the point that the *Peri Hermeneias* deserves further study, and remarked that this should be undertaken by both logicians and classicists, since any definitive assessment will need to be founded on studies of both the logical content of the work and the language in which it is presented. The main aim of this book is to facilitate this study by making the work more accessible to both kinds of scholar; so the central item of the book is our translation and the text of the *Peri Hermeneias*. Apuleius's Latin in this work is not at all easy going for anyone who is not used to the terse, 'closed fist' style of the dialectician, with only occasional patches of the more expansive, 'open palm' of the rhetorician. We have tried to produce a translation which can be used on its own by the logician who has no Latin, or in conjunction with the Latin text by anyone who chooses to do so.

These introductory chapters and the Appendices are intended to make the approach to the *Peri Hermeneias* itself somewhat easier, by providing some basic background material and some preliminary sorting out of the Apuleian logical system. Chapters 2 and 3 set out the Apuleian and logical background material in a quite elementary way, and, since we are trying to cater for both logicians and classicists, it is inevitable that some of this will already be very familiar to some readers. Chapter 4 discusses the scope of the *Peri Hermeneias* in greater detail, and introduces discursively three logical concepts which play key roles. This preview of the logical concepts and terminology is continued in Chapter 5, while Chapter 6 presents an outline of Apuleius's logical system. Nevertheless, within this basically elementary framework, we have tried to advance matters a little at a number of points where such advances are not at variance with the aims of an introduction. So, in Chapter 2 we take the debate about the Apuleian authorship of the *Peri Hermeneias* a step further; and in Chapters 4, 5 and 6 we not only correct a few points in Sullivan's treatment but also raise some matters on which he is silent. Although the Apuleian glossary in Appendix A is mainly intended to provide a useful reference tool, Appendices B and C break some new ground on matters on which there has been confusion or silence.

It will be seen from this sketch of the content of the book that the most ambitious aspect of our aims is our attempt to meet the needs of both classicists and historians of logic. This Introduction is not a systematic treatise on the *Peri Hermeneias* on the scale of Sullivan's *Apuleian Logic*, although there is some unavoidable overlap between this book and his, as well as some interplay between the two. Although some Apuleian research is reported here, our main aim remains that of facilitating further research. An important aspect of this is the provision of a complete

translation, together with the Latin text, which are, unfortunately, not included in Sullivan's book.

A Note on our Translation

Since our main aim in translating the *Peri Hermeneias* is to make the work more accessible for study and evaluation of its content and its place in the history of logic, we have tried to present it 'warts and all'. Not the least of the 'warts' is the rather unfamiliar terminology which results from Apuleius's Latinisation of Greek logic, and we have attempted to preserve this by either simple transliteration or by very direct translation. On the whole, we have followed Sullivan's renderings of the technical terms quite closely, to facilitate the use of his book in conjunction with our translation. However, in one significant case we have parted company from him. Sullivan translates *alterutrae*, which is a perfectly normal Latin word, as "eithers", which is hardly normal English. We have accepted gratefully the suggestion of Jonathan Barnes that "alternates" is a more satisfactory rendering. We have avoided translating the technical terms into the conventional and familiar ones of traditional syllogistic logic (e.g., *alterutrae* as "contradictories") because this would make it too easy to impose a particular, and possibly mistaken, interpretation. Since we have been at pains to let our author speak for himself in that respect, it has also seemed necessary to do very little to soften the acerbities of his style beyond what is necessary to produce intelligible English sentences. The translation is, therefore, purposely very direct; and where the demands of reasonable English have forced us to supply a word or phrase not represented in the Latin, we have generally enclosed the addition in square brackets. Lacunae in the Latin text are marked by asterisks in the translation; but in the case of corruptions or doubtful readings we have just made the best sense we can of the text without marking them in the translation.

Our translation is based on the Teubner text edited by Paul Thomas,[6] which is included in Part II with the permisssion of the publishers. Although we have also consulted the older Oudendorp and Hildebrand texts, the translation departs fom the Thomas text at only a few points—in a few matters of punctuation (where the other versions seemed to fit the sense better), in one place where the manuscripts have left successive editors in a state of uncertainty, in two readings (see Notes 2 and 8 to the translation), and in the matter of the actual diagram of the Square

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[6] Paul Thomas, *Apulei Madaurensis Opera Quae Supersunt*, Volume III: *De Philosophia Libri, Liber* ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ, Stuttgart 1970.

of Opposition. Thomas took over from Goldbacher an elaborate form of the diagram, which we have abandoned in favour of one which fits more accurately Apuleius's own description of how to draw it.[7]

The Thomas text is divided into chapters of unequal length, numbered I to XIV. We have adopted this division in our translation, and in future our references to passages in the *Peri Hermeneias* will be to these chapters, as e.g., "P.H.IX". Sullivan elaborates his references by giving in addition the Thomas page and line numbers, and, for good measure, adding the Oudendorpian section number—e.g., "Apuleius, *op. cit.*, IX, p.187, 6-7 (274)". Since even the longer chapters of the *Peri Hermeneias* are quite short, it seems to us that our shorter form of reference should suffice for all practical purposes.

[7] See Appendix B for discussion of the Apuleian form of the Square of Opposition diagram.

CHAPTER TWO

APULEIUS AND THE *PERI HERMENEIAS*

Apuleius reveals a certain amount of information about his life through his writings, but just the same there is much we do not know about him. His dates have to be approximate. We cannot be sure exactly when nor in what order the various events of his life occurred (e.g., his travels and writings). In addition, there is doubt about the authorship of some of the works that usually bear his name, including the work which is of special interest to us, the *Peri Hermeneias*. But the *Metamorphoses*, *Apologia* and *Florida* are universally agreed to be by Apuleius.

THE MAN AND HIS WORK

It is generally agreed that Apuleius was born into a family of wealth and note at Madaura, a Roman colony in Africa, about A.D. 125.[1] This places him in the so-called Second Sophistic, a period of literature dating from the reign of the emperor Hadrian (A.D. 117-138) and continuing under the Antonines, especially under Antoninus Pius (A.D. 138-161) and Marcus Aurelius (A.D. 161-180). The writers of this period looked back more than five hundred years to the age of the sophists in fifth century Greece and revived their interest in the study of rhetoric and philosophy, as well as their tendency to move about the places of learning of the ancient world (e.g. Athens, Rome, Alexandria). Linguistically, most Latin writers of this period looked back to the pre-Ciceronian age.

Although the Second Sophistic was not an age of cultural greatness—it boasts no Virgil or Horace or Cicero, let alone a Plato or an Aristotle—it was nevertheless an age of cultural diversity and intense activity. Its literature abounds with handbooks, commentaries and epitomes on the most varied subjects, which testifies to a public with a keen nose for information, even if the depth of knowledge sought was not necessarily great. The culture can be described aptly as bilingual, with both Greek and Latin in wide use, and as cosmopolitan, since the writers, both literary and technical, came from all parts of the Roman empire. The considerable periods of political stability and the spread of Greek and Latin throughout the Roman world meant that travel and study in the various centres of learning were relatively easy, which in turn encouraged the

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[1] See P.G. Walsh, *The Roman Novel*, Cambridge 1970, Appendix 2, p.248.

embrace of cultural diversity. Although it goes against commonly held views, one might almost label this age which was neither Golden nor even Silver as an "Age of Excitement". Apuleius was certainly in his element in this sort of intellectual environment.

In his philosophical writings he looked back in time by approximately five hundred years to such scholars as Plato (428-348 B.C.) and Aristotle (384-322 B.C.), two obvious influences on his philosophical thought. He himself claims in P.H. IV that he is a 'Platonic philosopher', although in *Florida* XX he might be taken to be laying claim to a more eclectic position. But, in any case, we must remember that by Apuleius's time Platonism was hardly a monolithic philosophy, and the very existence of an institutional Academy at Athens is at best tenuous.[2]

Apuleius received his early education at Carthage (and possibly even some of it at Madaura), where it is likely that he studied literature, grammar, rhetoric and philosophy. Perhaps he is referring to his elementary education in *Florida* XX when he writes:

> Prima creterra litteratoris rudimento eximit, secunda grammatici doctrina instruit, tertia rhetoris eloquentia armat.
>
> The first cup, that of the schoolmaster, delivers one from the basics; the second, that of the grammarian, furnishes one with erudition; the third, that of the rhetorician, equips one with eloquence.

Furthermore, he tells us in *Florida* XVIII that his philosophical studies, although strengthened in Athens, had been begun in Carthage; while in *Florida* XX he tells us that besides undertaking further philosophical studies in Athens he also studied a host of other subjects, including poetry and geometry.

He appears to have travelled throughout the East learning more and more about the various religious cults and practices of magic before reaching Rome (probably early 150s), where he claims to have practised law and to have continued his interest in religion. In fact, he claims to have been received into a number of cults.[3]

After his time in Rome Apuleius seems to have returned to Africa. He states in *Apologia* LXXII-LXXIV that en route to Alexandria he broke his journey at Oea, where he fell ill and so had to extend his stay there. This resulted in his marriage to a wealthy widow and his trial on a charge of using magic to win her affections (c. A.D. 155-160).

At some stage after he had been cleared of these charges, Apuleius

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[2] See, e.g., John Dillon, *The Middle Platonists: a Study of Platonism 80 B.C. to A.D. 220*, London 1977.

[3] See *Apologia* LV for references to his religious affiliations.

returned to a public life in Carthage,[4] which Walsh points out must have been during the 160s.[5] Walsh also notes that there is no record of Apuleius's activities after 170,[6] a fact which has led some people to believe that Apuleius must have died about then (say in 171),[7] although other scholars feel that he may still have been alive in 180 or even 190.[8]

As mentioned above, there is doubt about the order in which Apuleius composed his works, so we cannot append dates to them with much accuracy. The *Apologia* is the only work that can be dated with any degree of confidence. It belongs to the period when Apuleius was on trial in Oea, so we can say it was written about A.D. 158, since we know the date of office of the proconsul Claudius Maximus, before whom the case was heard.

It is believed that a number of Apuleius's works covering many different topics have not survived.[9] Of the works that have survived (*Metamorphoses*, *Apologia*, *Florida*, *De Deo Socratis*, *De Platone et eius Dogmate* I and II, *Peri Hermeneias*, *De Mundo*), there is no doubt that Apuleius's masterpiece is the *Metamorphoses* (more frequently referred to as *The Golden Ass*). This entertaining novel of adventure is certainly his best known work, while the *Peri Hermeneias* is probably his least known. Some modern scholars have even doubted whether Apuleius wrote the latter, and there have been various misconceptions concerning this extremely interesting work on formal logic. [A discussion of the Apuleian authorship of the *Peri Hermeneias* follows in the next section.] Of course, the *Peri Hermeneias* could simply be taken as yet another instance of Apuleius's versatility: there is no good reason why such a lively personality with wide interests should always write exactly as he did in the *Metamorphoses*. After all, "he is ever the *desultor litterarum*, to use one of his own figures, leaping from one literary horse to another ...".[10] Even the *Florida* contains different styles and subject-matter, including philosophical topics.

The Authorship of the Peri Hermeneias

Until modern times Apuleius's authorship of the *Peri Hermeneias* had not been in doubt. G.F. Hildebrand, in the middle of the last century, seems

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[4] *Florida* XVI and XVIII.

[5] Walsh, op. cit., p.249.

[6] Ibid., p.251.

[7] Mark W. Sullivan, *Apuleian Logic—the nature, sources, and influence of Apuleius's Peri Hermeneias*, Amsterdam 1967, p.8; Elizabeth H. Haight, *Apuleius and His Influence*, New York 1963, p.3.

[8] Walsh, op. cit., p.251; James Tatum, *Apuleius and 'The Golden Ass'*, Ithaca 1979, p.105.

[9] See the list in the Introduction to the Budé edition of *Apulée: Apologie, Florides*, 1971, p.xviii.

[10] B.E. Perry, *The Ancient Romances*, Berkeley 1967, p.239.

to have been the first to question Apuleius's authorship and since then scholars have divided into two distinct groups on this question: those who accept Apuleius's authorship and those who do not.[11] One of the earliest respondents to the objections raised by Hildebrand, and later by Goldbacher, to Apuleius's authorship was P. Meiss. Meiss's comments are endorsed and reprinted in Sullivan.[12] Like Meiss and Sullivan, we cannot see that there is any good reason to reject Apuleius as author of the *Peri Hermeneias*, but at the same time we feel that neither of these two scholars has presented adequate arguments in favour of Apuleius's authorship. Nevertheless, Meiss's treatment of the objections raised by those opposed to the Apuleian authorship is extremely valuable, especially since it brings to light the unconvincing nature of most of the objections. We shall now discuss these objections, though not in the order in which Meiss presented them.

Objections treated by Meiss

(1). The *Peri Hermeneias* cannot be Apuleian because it does not appear in the manuscripts with the rest of *De Platone et eius Dogmate* (hereafter, *De Platone*).

This merely shows that for some unknown reason the *Peri Hermeneias* was entered separately in some manuscripts. It does not prove that Apuleius did not write it. Meiss's conjecture that a copyist or manuscript writers may have decided that it was appropriate to separate the *Peri Hermeneias* from the other two parts of *De Platone* is feasible. After all, it is of the size and nature of a textbook and we do know that in later centuries it came to be used as a logic textbook.[13] It is quite possible that it was used as a textbook from an early date, and so was separated from the rest of *De Platone* at that time. We also know that some ancients (e.g., Cassiodorus and Isidore of Seville) made use of the *Peri Hermeneias*, which they referred to as being by Apuleius.[14]

(2). The *Peri Hermeneias* does not carry out Apuleius's promise to discuss Platonic logic in the third section of *De Platone*.

The promise is said to occur at *De Platone* I.iv, where Apuleius states fairly briefly that he will treat the three sections of philosophy in the order, natural, moral, rational. It is hard to be certain of what Apuleius

[11] See the lists in the Introduction Générale of the Budé edition of *Apulée: Opuscules philosophiques*, 1973, p.vii, n.1 and p.viii, n.1.

[12] Sullivan, op. cit., reports Meiss's views on pp.9-14 and quotes the German text in an Appendix, pp.235-242.

[13] Ibid., p.204 ff.

[14] Cassiodorus, *Institutiones*, II.iii.12, and Isidore of Seville, *Etymologiae*, II.xxviii.22.

had in mind, but the beginning of the *Peri Hermeneias* could well be seen as the opening of the third part of *De Platone*:

> Studium sapientiae quam philosophiam vocamus, plerisque videtur tres species seu partes habere: naturalem, moralem; et de qua nunc dicere proposui rationalem, qua continetur ars disserendi.

> The study of wisdom, which we call philosophy, seems to most people to have three species or parts: the natural, the moral and the rational, in which is contained the art of arguing, and on which I proposed to say something at this point.

Furthermore, it is important to bear in mind a point made by Meiss and taken up by Sullivan "that there was no specific logic taught in the Platonic school other than the Peripatetic and Stoic logic; ... there was no other logic available which Apuleius could present."[15] Because the *Peri Hermeneias* does not treat some supposed 'Platonic' logic, it does not mean that it was not an Apuleian composition. It might not be the third section of *De Platone*—that is difficult to establish conclusively, we admit—but one can accept the *Peri Hermeneias* as *De Platone* III if one can believe that Apuleius did not mean 'the logic of Plato' as literally as most scholars have interpreted his promise. It is generally known that Plato did not teach formal logic, but it seems to have been in order for Platonists of the second century A.D. to incorporate "all of Aristotle's logic into Plato's system".[16] What is more, it has been noted that Albinus, who was a near-contemporary of Apuleius, "represents an entirely syncretistic Platonism. Free and full use is made of Aristotelian and some Stoic doctrines—obviously Aristotle is seen simply as a Platonist, the Stoa as a branch of Platonism."[17] We may also remark here that Aulus Gellius, a Roman contemporary of Apuleius, studied under Calvenus Taurus, who was the leading Platonist of his day in Athens; and Gellius makes it quite clear in his *Noctes Atticae* that the logic he acquired was a mixture of the Stoic and Aristotelian logics. It must, therefore, have been taken for granted in Apuleius's lifetime that since logic, which was not purely Platonic, could be included in a school of Platonic studies, it could also be included in a book dealing with Platonic material.

(3). The *Peri Hermeneias* cannot be by Apuleius because his name has been used in the text: it is thought to be improper ["läppisch und geschmacklos"] to use one's own name in a scholarly work.

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[15] Sullivan, op. cit., p.12.

[16] P. Merlan, "Greek philosophy from Plato to Plotinus", in *The Cambridge History of Later Greek and Early Medieval Philosophy*, ed. A.H. Armstrong, Cambridge 1967, p.68.

[17] Ibid., p.64.

We agree with Meiss who finds this objection exceptionally weak, arguing that it seems perfectly acceptable to use oneself in the way Apuleius does in P.H. IV. It is customary, in fact, and seems quite natural, to use oneself in examples for the purpose of teaching. In the light of this, it might even be argued that the use of Apuleius's name in P.H. IV is a point in favour of his authorship rather than the opposite.

(4). The style is not Apuleian—it is too dull: "Das Werk ist dürr, trocken, geistlos in Form und Inhalt."[18]

Certainly the *Peri Hermeneias* does not have the literary qualities of the *Metamorphoses* nor does it measure up to the *Florida* in that respect, but should we expect it to do so? It is, after all, a technical work, suitable for use as a textbook, not intended as a great work of literature.

What is more, it is known that there was already a tradition of this style of presentation for logical treatises, which had been established by Aristotle's *Prior Analytics*. Bocheński remarks that the *Prior Analytics* was "composed in such compressed language that most readers find it very hard to understand. Indeed the very style is of the greatest significance for the history of logic; for here we have the manner of thought and writing of all genuine formal logicians, be they Stoics or Scholastics, be their name Leibniz or Frege."[19]

Walsh also points out in a discussion of the *Metamorphoses* that Apuleius's style of writing varies according to the type of work: "It should be noted that the style is utterly different from that of the *Apology*, where Cicero is the model, and from that of the philosophical works, where there is no attempt to write with élan or colour."[20] L.R.Palmer makes the same sort of point when he sums up our author as: "A great virtuoso of language, who in accordance with ancient doctrine adapted his style to the genre, Apuleius ranges from the comparative simplicity and sobriety of the *Apology* to the suffocating luxuriance of the *Metamorphoses*."[21] It is therefore hardly surprising that the *Peri Hermeneias* is mainly written with the closed fist of the dialectician.

In addition, Apuleius seems to pride himself on his versatility, when he claims in *Florida* XX that he is interested in many areas of learning and in many genres of literature:

> Canit enim Empedocles carmina, Plato dialogos, Socrates hymnos, Epicharmus modos, Xenophon historias, Crates satiras: Apuleius vester haec omnia novemque Musas pari studio colit.

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[18] Sullivan, op. cit., p.236.

[19] I.M. Bocheński, *A History of Formal Logic*, Notre Dame 1961, p.66.

[20] Walsh, op. cit., p.63.

[21] L.R. Palmer, *The Latin Language*, London 1954, pp.144-145.

> For Empedocles composed poems, Plato dialogues, Socrates hymns, Epicharmus rhythmical measures, Xenophon histories, Crates satires: your Apuleius has devoted himself to all of these and the nine Muses with equal enthusiasm.

Leaving the *Peri Hermeneias* on one side, his other extant writings bear this out. They are of such a varied nature that one could expect to find certain changes in tone and style, depending on the content and the particular purpose of each work.

The use of artistic techniques is inappropriate in some works, as it would have been in the *Peri Hermeneias*, especially since the 'closed fist' approach of the dialectician was already an established tradition. There are, however, a few passages of the more expansive variety, which are mostly in the early parts of the *Peri Hermeneias* and which show the open palm of the rhetorician. This is not very surprising, since it is well known that Apuleius was an experienced orator. It is inevitable, in fact, that his rhetorical training would appear in his writings in the form of stylish arrangement, variety, appropriate adaptation, etc., to suit the particular occasion and wherever the matter allowed it.

Further observations on Apuleius's style

The general character and shortness of the *Peri Hermeneias* make it difficult to argue conclusively on grounds of style that the work was written by Apuleius. Yet, there are a few points of similarity between the *Peri Hermeneias* and other works of Apuleius, which is understandable, as mentioned above, in spite of his deliberate attempts to be the 'closed-fisted' dialectician in this particular work. These points, even if few and scattered, at least make the traditional attribution not impossible.

One is struck at once by the extravagant accumulation of a single part of speech; for example, the string of gerunds near the beginning of the *Peri Hermeneias* in the listing of different kinds of speech:

> ... imperandi mandandi succensendi optandi vovendi irascendi odiendi invidendi favendi miserandi admirandi contemnendi obiurgandi paenitendi deplorandi ...

The lack of connecting words and the use of homoioteleuton smack of Apuleius's style immediately and can be compared with similar accumulations in *De Platone* II.i:

> ... prudentiam, iustitiam, pudicitiam ...

and in *De Platone* II.xvi:

> ... aegritudinem, desiderium, amorem, misericordiam, metum, pudorem, iracundiam.

Then, there are the phrases that follow on immediately after the accumulation of gerunds just mentioned:

> ... tum voluptatem afferendi tum metum incutiendi.

They are neatly arranged in Apuleius's familiar manner of using balance and rhyme and are reminiscent of similarly arranged phrases at *De Platone* I.xviii:

> ... nihil adpetunt, nihil commovent ...
>
> ... unam imperitiam nominat, aliam insaniam vocat ...

Neat interchange of words is yet another customary Apuleian practice, which can be found in the *Peri Hermeneias*, particularly in the early stages:

> ... lata anguste, angusta late ...
>
> ... nova usitate, usitata nove ...

and also in *Florida* XVI:

> ... inter optimos clarissime, inter clarissimos optime ...

This type of rhythmical pattern and balance occurs even in technical sections of the *Peri Hermeneias*, e.g.:

> ... altera pertingens ab universali dedicativa ad particularem abdicativam, altera a particulari dedicativa ad universalem abdicativam. [P.H. V]

There are a few other points of similarity between the *Peri Hermeneias* and other works of Apuleius which are worth noting, albeit briefly. For example, in both it and the *Florida*, *Apologia* and *Metamorphoses*, there are references to the practice of oratory, which is a topic especially appropriate to Apuleius, as an experienced orator, and to the Second Sophistic, with its special interest in the elaborate use of stylish rhetorical devices. In these same works there is yet another common factor, viz., the occurrence of certain words and phrases often associated with Apuleius: archaisms, which come mainly from the comic writers (e.g., parts of *aio—aias* and *ait*; *certo*; *utrobi(que)*; *partim*; *hisce*); derivatives of onomatopoeic words like *cachinnare* and *hinnire* (especially their adjectives, *cachinnabile* and *hinnibile*); various derivatives of *vicis*, which seems to be a favourite of Apuleius (*vicem*, *invicem*, *vices*, *vice*, *vicissim*—all occur quite frequently). The compact phrase *id genus*, doing the job of *eius generis* and derived from colloquial speech, occurs in both the *Metamorphoses* and the *Peri Hermeneias*. Although this phrase occurs only once in Cicero, it is found more frequently in pre-Ciceronian writers and is just the kind of phrase which appealed to Apuleius.

These few points show that there are some similarities in matters of style, word usage and even subject-matter (e.g., oratory) in the *Peri Hermeneias* and accepted Apuleian works. They are certainly not sufficient to prove conclusively that Apuleius wrote the *Peri Hermeneias*, but they do make his authorship not impossible, and even lend it some plausibility.

It is possible that more compelling grounds for accepting or rejecting the Apuleian authorship of the *Peri Hermeneias* may eventually emerge from stylometric studies. However nothing conclusive has so far emerged from studies of the prose rhythms of the sentence-endings, or *clausulae*, in the works which have been attributed to Apuleius. We shall therefore make only a few brief remarks on this topic.

It is known that rhythmical *clausulae* in Latin prose-writing fall into two classes—metrical and accentual. In a recent study[22] of accentual *clausulae* in Imperial Latin prose, Oberhelman and Hall report that the *Apologia*, *Metamorphoses*, *Florida* and *De Deo Socratis* are non-accentual, while the *Peri Hermeneias* (along with *De Platone* and *De Mundo*) is accentual. However, we need to note that Oberhelman and Hall are concerned with tracing the development of accentual *clausulae*, and not with using their evidence to determine the authorship of works. In fact, *because* they recognise a problem about the authenticity of the accentual works attributed to Apuleius, they exclude them from their survey of the development of the accentual *clausulae*.[23] Furthermore, Oberhelman and Hall remark that "there is no reason to assume that an author could not employ or avoid at will a device as patently artificial as a metrical or accentual pattern."[24] They also point out that Lactantius (A.D. 240-320) produced both accentual and non-accentual works.[25]

Final questions and opinions

From the discussion so far, it is clear that the Hildebrand/Goldbacher arguments failed to establish their point, and also that there is sufficient evidence from language and style to make plausible the attribution of the *Peri Hermeneias* to Apuleius. Furthermore, our discussion of the second objection to Apuleius's authorship makes it clear that if he did write the work, its logical content does not count against its being the third part of *De Platone*. Before we come to making as final a judgement on these

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[22] Steven M. Oberhelman and Ralph G. Hall, "A new statistical analysis of accentual prose rhythms in imperial Latin authors", *Classical Philology*, Vol.79, 1984, pp.114-130.

[23] Ibid., p.127, n.35.

[24] Ibid., p.129.

[25] Ibid., p.128.

matters as the evidence permits, we must consider a conjecture of Meiss that the *Peri Hermeneias* is a translation by Apuleius of an unknown Greek work, possibly with additions of his own. Conjecture has been rife in this area, and Meiss's seems to have been elicited by the conjectures of others.

In their attempts to argue that Apuleius did not write the *Peri Hermeneias*, Hildebrand and Goldbacher, one of Hildebrand's main supporters, produced two pieces of pure conjecture, which are very difficult to accept. Hildebrand, for example, decided that the author of the *Peri Hermeneias* was a third or fourth century grammarian; while Goldbacher came up with the idea that Apuleius's name became appended to the *Peri Hermeneias* unintentionally. Although these two suggestions are possible, they are of no value without adequate support, and there is no evidence for either. In fact, it seems that Hildebrand and Goldbacher felt that they had to offer some sort of explanation for the existence of the *Peri Hermeneias*, no matter how feeble, and clutched at the first available straws.

On the other hand, however, Meiss maintained that the *Peri Hermeneias* was written by Apuleius and is the third book of *De Platone*, with which we would agree, but we can hardly accept his further conjecture that the *Peri Hermeneias* is a translation, with Apuleian additions, of some unknown Greek work. There is no reason to advance such an hypothesis. If it is as he says, how are we meant to tell which pieces are Apuleian additions? Meiss does not go into detail on this issue and bases his idea only on the fact that there are a few Greek terms used in the *Peri Hermeneias*, as well as some technical Latin words he regards as transliterated Greek logical terms. Perhaps the Latin transliterations are seen as being Apuleian additions, while the Greek terms are from the unknown Greek work to which Meiss refers! In the absence of better evidence, Meiss's hypothesis is as weak as the Hildebrand/Goldbacher conjectures.

Perhaps this 'translation thesis', which was held by a number of nineteenth century scholars including Prantl and Zeller, is based on nothing more than a supposition that no Latin writer could have written the work—especially Apuleius, who had a reputation for 'fiddling' with earlier works. There are, of course, his famous additions to the traditional ass-man story in the *Metamorphoses*, for which a Greek version may well have been his source; while the *De Mundo* is accepted as being a translation (with slight changes and additions) of a Peripatetic work on geography and cosmology. But any supposition of logical incompetence among Latin writers has to be balanced against the fact that we have evidence of a long-running Roman re-thinking of Greek logical notions.

In this connection we may cite Aulus Gellius, who, in *Noctes Atticae* XVI.8, records his own attempts to study formal logic, in the course of which he consulted a book by Lucius Aelius Stilo (born c. 150 B.C.). In the same passage, and in the same connection, he also mentions Marcus Terentius Varro and Cicero, both of whom happened to be pupils of Stilo.

In fact, the *Peri Hermeneias* itself has a brief discussion of the term for *proposition* used by a number of individuals, including the Greek versions and progressing through some Latinisations of the concept, which again supports the idea of Roman re-working of Greek thought as opposed to a mere translation of it. Since we know that Apuleius studied in Greece, accepting that he wrote the *Peri Hermeneias* does not require some lost Greek work for him to translate—merely that he had learnt a good deal of logic.

We conclude, then, that there are no worthwhile reasons for saying either that Apuleius did not write the *Peri Hermeneias*, or that he was merely translating an otherwise unknown Greek work, or that it cannot be the third part of *De Platone*. In short, it is unnecessary to question the views on these matters which prevailed from late antiquity until the last century.

CHAPTER THREE

THE LOGICAL BACKGROUND

We shall now review, rather briefly and from an elementary standpoint, the three major strands discernible in the history of formal logic before Apuleius's time. These three are the Aristotelian, the later Peripatetic and the Stoic strands. Since Apuleius had some acquaintance with all three, they form the logical background against which the *Peri Hermeneias* was written. In this review, we shall pay much more attention to Aristotle's logic than to the other two strands. Furthermore, it needs to be said that the whole treatment will be very elementary, so that it can be omitted quite safely by any reader who already has a reasonable grasp of the topics covered. On the other hand, a person who needs to read it, should find that it provides all that is necessary to approach the *Peri Hermeneias* as a document with a particular place in the history of logic.

Aristotle's Formal Logic

Aristotle's formal logic is founded on an analysis of simple propositions (i.e., propositions which are not themselves compounds formed from other propositions) as combinations of two *terms*. So, for example, the two terms 'man' and 'mortal' can be combined in different ways to give different propositions. One of these is the *indefinite* proposition:

(1) A man is mortal.

Indefinite propositions play no real part in the formal logic developed by Aristotle, even though he identifies them as one type of simple proposition. Essentially, he deals only with *universal* and *particular* propositions. From the two terms given, the following universal propositions can be formed:

(2) Every man is mortal.
(3) No man is mortal.
(4) Every mortal is a man.
(5) No mortal is a man.

Of these, (2) and (4) are said to be *affirmative*, since they affirm something of every man and of every mortal, respectively. But (3) and (5) are *negative*, since in the same way they deny something. The term ('man' or 'mortal') of which something is affirmed or denied is the *subject*, while

that which is affirmed or denied of something is the *predicate*. In a similar way, we can form four particular propositions from the same two terms:

(6) Some man is mortal.
(7) Some man is not mortal.
(8) Some mortal is a man.
(9) Some mortal is not a man.

These are affirmative or negative in the same way as the universals. It is with *assertoric* or *categorical* propositions of the types exemplified by (2)-(9) that Aristotle's formal logic is concerned. This logic is often called Aristotle's *syllogistic*. Although Aristotle occasionally seems to flirt with them [e.g., *Prior Analytics* I,33], there is really no place in his syllogistic for *singular* propositions, in which the subject-expression refers to a single individual—e.g., 'Socrates is mortal'. The reason for this is, briefly, that an Aristotelian term must be capable of appearing in propositions in both the subject position and the predicate position. But a proper name cannot be affirmed or denied of anything, so it cannot occur in the predicate position, and so it is not a term.

Aristotle also dealt extensively with *modal* propositions, which contain modal particles, such as 'necessarily' and 'possibly'. However, a description of his modal logic is not necessary for our purposes, and we shall restrict ourselves to his assertoric syllogistic. In its mature form, this logic is a properly formal and structural study, in which generality is achieved by the use of letters as term-variables instead of concrete examples of terms. The use of variables was one of the great advances which facilitated the development of a truly formal logic, and this innovation alone would have ensured Aristotle's major place in the history of logic. By using term-variables, Aristotle was able to make a formula like 'Every S is P' represent every universal affirmative proposition. The logical relations into which such propositions can enter can then be investigated in a way which is both general and formal—for the relations investigated will then be precisely those which derive from the structure expressed by the formula, and will be independent of the meanings of particular terms such as 'man' and 'mortal'. Another way of expressing this is to say that the use of variables enabled Aristotle to investigate the logical properties of just four propositional forms:

Every S is P.
No S is P.
Some S is P.
Some S is not P.

[We may note that a logician who uses representative terms, such as 'man' and 'mortal', has to achieve generality by implicitly treating the representative terms as term-variables. The danger of this procedure is

that their implicit use as variables may be forgotten so that the meanings of the representative terms play a part, thus detracting from the formality and generality. The heuristic advantage of it is that, just because the representative terms have a meaning, the reader may be brought to grasp the logical relations under discussion more readily.]

It is convenient to divide our account of this investigation into two parts—on the one hand, an account of the logical relations which hold between individual assertoric propositions, under the heading 'Opposition and Conversion', and, on the other, the theory of the assertoric syllogism.

Opposition and Conversion

The theory of opposition covers some of the basic relations that hold between the four propositional forms. 'Every S is P' and 'No S is P' are *contraries*. If one is true, the other is false, though not *vice versa*. That is, they cannot both be true, but it is possible that both are false. On the other hand, 'Every S is P' and 'Some S is not P' are *contradictories*, and are opposed in a stronger way than a pair of contraries are. 'No S is P' and 'Some S is P' are also contradictories. In the case of a pair of contradictories, if one is true, the other is false, and *vice versa*. That is, exactly one of a pair of contradictories is true. Contrariety and contradictoriness are the main relations treated in Aristotle's theory of opposition.

The theory of conversion deals with the question:

> What proposition of the form 'P—S' is true whenever a given proposition of the form 'S—P' is true ?

The answer to this question is said to be the *converse* of the given proposition, and is logically entailed by it. Aristotle's results on conversion can be summarised thus: The converses of 'Every S is P', 'No S is P' and 'Some S is P' are, respectively, 'Some P is S', 'No P is S' and 'Some P is S'. The fourth form, the particular negative, 'Some S is not P', has no converse. It should be noted that only in the cases of the universal negative, 'No S is P', and the particular affirmative, 'Some S is P', is the relation between a proposition and its converse a reciprocal one.

The Assertoric Syllogism

Aristotle's theory of the assertoric syllogism is a classical concise and systematic treatment of a limited area of formal logic. In fact, the early sections of the *Prior Analytics*, in which he sets it down, are not only a fine example of the terse "closed fist" style of logical writing, but they also

set a high standard of logical rigour, some blemishes notwithstanding. What Aristotle is concerned with is the set of inferences from pairs of assertoric propositions, of the forms we have been discussing, to an assertoric conclusion. One of the blemishes on his treatment is his attempt to define a syllogism as "a form of speech in which, with certain things laid down, something else follows by necessity from them" [*Pr. An.*,I,1]. This is nearer to a definition of deductive inference in general than a definition of the quite special forms of inference he intends to treat. But it becomes quite clear from his treatment that a syllogism is a trio of propositions, two premisses and a conclusion, all three being assertoric propositions, such that the conclusion "follows by necessity" from the premisses; and, in addition, each term in the conclusion must occur in just one of the premisses, and the premisses must have exactly one term in common. So the three propositions in a syllogism contain between them just three terms, each of which occurs in exactly two of the propositions. By convention, the predicate of the conclusion is called the *major term*, and the premiss in which it occurs is called the *major premiss*. The subject of the conclusion is called the *minor term* and its premiss is the *minor premiss*. The Aristotelian convention is to state the major premiss first in any syllogism. The term common to the two premisses is called the *middle term*. As we indicated above, Aristotle calls a trio of propositions a syllogism only if the conclusion follows logically (i.e., "by necessity") from the premisses. Modern parlance admits of speaking of an invalid syllogism, but Aristotle's does not.

Although we have spoken of syllogisms as inferences, as if the general form were:

Premisses, *therefore* conclusion.

Aristotle regularly expresses syllogisms as conditional statements of the form:

If the premisses, *then* the conclusion.

For the sake of an example, take the first syllogism stated in the *Prior Analytics*, which he states as:

> If A is predicated of all B, and B of all C, A must be predicated of all C.

Under our conventional way of expressing assertoric propositions, this becomes:

> If every B is A, and every C is B, then every C is A.

This suggests that Aristotle regarded a syllogism as a logical law rather than as an inference scheme, the latter being stated more appropriately as:

Every B is A. Every C is B. Therefore, every C is A.

Nevertheless, we should not allow this point to blind us to the fact that Aristotle was concerned with the investigation of the principles that govern what *follows* from what, which has been the main business of the formal logician ever since.

Aristotle treated syllogisms as falling into three classes, each class being determined by one arrangement of the terms in the premisses. Each of these classes is called a *figure*, and the arrangement of the terms in each figure is shown most clearly by setting out the three figure-schemata as pairs of premisses (as in the inference-scheme above), with 'S' for the minor term, 'M' for the middle term, and 'P' for the major term.

Figure I	*Figure II*	*Figure III*
M — P	P — M	M — P
S — M	S — M	M — S

Aristotle did not have any consistent structural way of defining the figures and seems to have employed, in part, some not entirely clear notions about the extensions of the terms. But the diagram above shows clearly that the figures are distinguished by the quite formal feature of the various possible positions of the middle term. It is presumably a reflection of Aristotle's failure to adopt a thoroughly structural approach that he failed to see that there is a fourth pattern, and therefore a fourth figure, in which the middle term is predicate in the major premiss and subject in the minor premiss. As a result of this failure to introduce a fourth figure, Aristotle was forced to treat the syllogisms that would have belonged to that figure in a rather complicated way as falling under the first figure. [We should note that apart from the 13th century Jewish philosopher Albalag, who appears to have had no influence at all on the development of logic, it has generally been believed that it is not until the 17th century that we find treatments of the syllogism which include a genuine fourth figure. However, we are indebted to Professor G. E. Hughes for drawing our attention to such a treatment in a 14th century text, viz. in Buridan's *Consequentiae.*]

In each figure, each premiss can, in principle, be of any of the four propositional forms. Aristotle's task was to sort out systematically which

premiss-pairs would logically entail a conclusion, and what that conclusion would be in each case. Essentially, his method is to consider each of the premiss-pairs in turn, showing either what conclusion follows or that no conclusion follows. To show that no conclusion follows from a given pair of premisses, he constructs counter-examples. That is, he produces particular substitutions for the term-variables under which the premisses will be true and the conclusion will be false. The logical principle relied on here is the fundamental one that in a valid inference we are never led from true premisses to a false conclusion. So, if an inference is found in which the premisses are true and the conclusion is false, the *form of inference*, of which that inference is an example, must be rejected, since it has been shown that it can lead from the true to the false. But to show that a form of inference is valid (i.e., that its Aristotelian formulation is a logical law—or, as Aristotle would say, there is a syllogism) is both more difficult and also more interesting from the point of view of the logician. Finding a solution to this problem was essential for the development of a systematic theory of the assertoric syllogism.

Aristotle's solution to this problem was to use the axiomatic method. He states four syllogisms in the first figure which are to function as axioms, in the sense that, while they are stated without proof, syllogisms in the other two figures are to be established by proving them from the given first figure forms.

The four axiomatic first figure syllogisms are:

(1) If every B is A, and every C is B, then every C is A.
(2) If no B is A, and every C is B, then no C is A.
(3) If every B is A, and some C is B, then some C is A.
(4) If no B is A, and some C is B, then some C is not A.

Aristotle described these syllogisms as *perfect*, in the sense that "nothing more than the premisses is needed to make the conclusion evident". Perhaps this should be taken as nothing but an expression of their axiomatic status in his deductive system, although he does seem to think that these syllogisms are particularly simple and evident. If one surveys syllogisms (1)-(4) above, it is immediately clear that each of the four basic propositional forms occurs as a conclusion in the first figure. Neither of the other figures has this characteristic: in the second figure the conclusion must be negative, and in the third it must be particular.

Leaving aside for the moment the methods of proof, we shall list the syllogisms proved in the second and third figures, using as variables the same letters we used in the first figure.

The *second figure syllogisms* are:

(5) If no A is B, and every C is B, then no C is A.
(6) If every A is B, and no C is B, then no C is A.
(7) If no A is B, and some C is B, then some C is not A.
(8) If every A is B, and some C is not B, then some C is not A.

The *third figure syllogisms* are:

(9) If every B is A, and every B is C, then some C is A.
(10) If no B is A, and every B is C, then some C is not A.
(11) If some B is A, and every B is C, then some C is A.
(12) If every B is A, and some B is C, then some C is A.
(13) If some B is not A, and every B is C, then some C is not A.
(14) If no B is A, and some B is C, then some C is not A.

Aristotle's main method of proof of second and third figure syllogisms is so-called *direct reduction* to the first figure. In using this method, one shows that a given pair of premisses yields a certain conclusion by showing that the given pair of premisses implies a pair of first figure premisses which yields that conclusion. The result one wants then follows by the principle that if a first thing implies a second, and the second implies a third, then the first implies the third. This method of establishing that the given premisses imply a pair of first figure premisses always involves conversion. As an example, consider syllogism (5). In *Prior Analytics* I,5, Aristotle considers the pair of premisses which we have written as 'No A is B' and 'Every C is B', and notes that if we convert the negative premiss we obtain 'No B is A'. We have, by hypothesis, the other premiss 'Every C is B'. And from the premisses 'No B is A' and 'Every C is B' we obtain the conclusion 'No C is A', using the first figure syllogism (2). So syllogism (5) is proved.

Let us unpack the logical principle which underlies this proof, and which is never stated by Aristotle. [We have already given a rather summary statement of it above]. Taking into account that we are dealing with pairs of premisses, and showing that one premiss in one pair is the converse of one in the other pair, it comes out as something like this:

> If two propositions together imply a third, then, if a fourth proposition implies one of the two, the fourth together with the other of the two implies the third.

In fact, this is still a summary compendium of two laws of *propositional logic*, the development of which had to wait until the logical researches of the Stoics. These laws depend for their validity not on the internal structures of propositions (e.g., as combinations of terms), but only on the logical relations between propositions as unanalysed wholes. We can

state the two laws most clearly if we introduce the letters "p", "q", "r" and "s" as variables over unanalysed propositions. Then the two laws of propositional logic involved in Aristotelian direct reduction are:

(a) If (p & q) implies r, then, if s implies p, then (s & q) implies r.
(b) If (p & q) implies r, then, if s implies q, then (p & s) implies r.

In some direct reductions, Aristotle relies on (a), as in the proof of (5), and in others he relies on (b).

Now in the cases of syllogisms (8) and (13), we have a particular negative premiss, which has no converse, and a universal affirmative premiss, whose converse is particular. Direct reduction, using conversion, is therefore impossible in these cases since no syllogism can have two particular premisses. For these syllogisms, Aristotle resorts to so-called *indirect reduction*, or proof *per impossibile*. Let us take the proof of (8) to illustrate the method. Syllogism (8) is:

If every A is B, and some C is not B, then some C is not A.

If we take the first premiss as it stands, but put the contradictory of the conclusion in place of the second, then we obtain as premisses 'Every A is B' and 'Every C is A'. But from these premisses it follows, by syllogism (1), that 'Every C is B', which is the contradictory of the replaced second premiss of (8). This amounts to a proof of syllogism (8), since it shows that one cannot assert its premisses and deny its conclusion. Like proofs by direct reduction, which rely on conversion, this proof also relies on the use of a law of propositional logic, which we can state in a general way as:

If two propositions together imply a third, then one of the two, together with the denial of the third, implies the denial of the other of the two.

This formulation of the theory of the assertoric syllogism, with the four first figure syllogisms as axioms, can be regarded as Aristotle's basic formulation of it. However, he also showed (*Prior Analytics*, I,7) that, by the use of proof *per impossibile*, the number of axioms can be reduced to two. What he shows there is that, in effect, the two first figure syllogisms with particular conclusions [i.e., (3) and (4)] can be proved *per impossibile* from those with universal conclusions [i.e., (1) and (2)].

THEOPHRASTUS

After Aristotle, there was some development of his type of term logic, notably by Theophrastus, Aristotle's immediate successor as head of the Lyceum. As well as improving the presentation of some of Aristotle's

logic, and possibly writing up in systematic form some of the later researches of the master, Theophrastus wrote some logical works of his own which have not survived. His most notable achievements may well have been in modal syllogistic, which does not concern us here; but there are a few points which require mention.

Theophrastus is credited with having formulated five so-called *indirect syllogisms* in the first figure. These are syllogisms whose premisses have the first figure arrangement, with the middle term as subject of the first premiss and as predicate of the second, but whose conclusion has the major term as subject and the minor term as predicate—that is, the conclusion draws its subject from the first premiss and its predicate from the second. An example of such a syllogism is:

If every B is A, and every C is B, then some A is C.

In the much later history of logic these five syllogisms reappear, with their premisses interchanged, in the fourth figure.

The five indirect syllogisms added to the first figure were not counted as perfect syllogisms; i.e., their role in the system was that of theorems, like syllogisms (5)-(14), rather than that of additional axioms. However, we shall see that Apuleius reports that Theophrastus also added a new axiomatic syllogism to the first figure. Although the passage in the *Peri Hermeneias* suffers from an unfortunate lacuna, it appears that this new syllogism contained an indefinite premiss and had an indefinite conclusion. If this attribution is correct, it may suggest that Theophrastus took up some of Aristotle's scattered remarks about indefinite propositions and tried to incorporate them into the syllogistic in a systematic way. An example of these remarks is one in *Prior Analytics*, I,4 to the effect that it will make no difference to syllogism (4) if we insert an indefinite proposition ('C is B') in place of the particular premiss.

According to the commentators from whom we know something of the work of Theophrastus, he also investigated *hypothetical syllogisms*, of which two examples are:

(a) If A then B; if B then C; therefore if A then C.
(b) If A then B; if B then C; therefore if not C then not A.

At first sight, at least to the eye of a modern logician, the conditional propositions of which each is composed make (a) and (b) look like inference forms in propositional logic. But in fact the examples given by the ancient commentators make it clear that the letters are to be taken as term variables and not as propositional variables. Perhaps 'If A then B' is to be taken to mean 'If A exists then B exists', or something of that kind. So the hypothetical syllogisms of Theophrastus are not really part

of a propositional logic properly so-called. Rather, they are specialisations, in an Aristotelian-type term logic, of forms found in such a propositional logic. Nevertheless, it is quite arguable that they indicate a trend of thought among Peripatetic logicians which could have resulted in the development of a genuine propositional logic if it had been pressed a little further.

Another point of interest about these hypothetical syllogisms is that Theophrastus stated them as inference schemes, rather than in the standard Aristotelian fashion as logical laws of a conditional form. This particular feature is found not only in the Stoic formulation of propositional logic but also in later expositions of assertoric syllogistic. In particular, we find it in the *Peri Hermeneias*.

Stoic Logic

In contrast with Aristotelian logic, the formal logic developed by the Stoics—often referred to as Stoic-Megarian logic—is hardly concerned at all with the analysis of simple propositions into combinations of terms. Its basic concern is with the ways in which compound propositions can be built from elements which are themselves complete propositions, whether simple or compound. Like Aristotle, though perhaps with a more complete understanding of what they were doing, the Stoics made use of variables to achieve generality in stating their logical principles. However, whereas Aristotle used letters as *term* variables, the Stoics used the ordinal numerals "the first", "the second", and so on, as *propositional* variables.

As we did in our treatment of Aristotle, so here we shall describe only so much of the Stoic system as is necessary to provide background for reading the *Peri Hermeneias*—even though this will mean that we have to leave on one side many of its most interesting aspects.

Given the basic concern of the Stoic logicians, it is not surprising that they paid a great deal of attention to the analysis of the particles used for forming new propositions from given ones. Their most famous discussions in this area concerned the conditional particle "if", on which we shall say nothing further here. In fact, we shall confine our remarks to the negative particle and the disjunctive particle "or". The simplest way of forming a new proposition from an old one is to insert a negative particle. But there are various ways of doing this, and the Stoics distinguished the *negation* of a proposition, in which "Not"—or, more idiomatically in English, "It is not the case that"—is prefixed to the whole proposition, from other *denials* in which the negative particle operates on only some part of the proposition. The point of this distinction can be seen by con-

sidering the different ways of inserting a negative particle into 'Some pleasure is good'—*viz.*, 'Some pleasure is not good' and 'Not: some pleasure is good' [or 'It is not the case that some pleasure is good']. Apart from the fact that only the second way of inserting the negative produces a compound proposition, it is clear enough that the two denials are not equivalent—for the first can be true when the second is false. But the point can, perhaps, be made most clearly by considering a conjunctive proposition:

(1) It is day and it is raining.

Even though

(2) It is day and it is not raining

is a denial of (1), and if (2) is true then (1) will be false, the Stoics regarded only:

(3) Not: It is day and it is raining

as the negation of (1).

The Stoics recognised two uses of "or", mirrored in Latin by *aut* and *vel*, the one to form an *exclusive disjunction* from two propositions, the other to form an *inclusive disjunction*. An exclusive disjunction is true when exactly one of the disjuncts is true, and false when both are true and when both are false. An inclusive disjunction is true when at least one of the disjuncts is true—i.e., it is false only when both disjuncts are false. In contrast with modern formal logicians, the Stoics seem to have attached more importance, and given more attention, to the exclusive disjunction than to the inclusive one.

The System of Inference Schemes

Just as Aristotle set out the theory of the assertoric syllogism in the form of an axiomatic system, so the Stoics, at least by the time of Chrysippus, had formulated an axiomatic version of propositional logic. Before going on to some details of their system, we should make one or two comparative remarks. The Stoic system was, as we have stressed, a system of propositional logic, and the ordinal numerals function as propositional variables. If one considers Aristotle's implicit definition of an assertoric syllogism as having two assertoric premisses containing three terms in all, it is clear that there is only a finite number of premiss-pairs, and so syllogisms, to be considered. In that sense, his system is a finite one. But there is no such built-in limitation to finiteness in the Stoic system. Furthermore, Aristotle does not seem to have been aware of the role played by laws or rules of propositional logic, even though, as we have pointed

out in some detail, they provide machinery which is essential for his proofs of second and third figure syllogisms. The Stoic logicians appear to have had a more sophisticated grasp of the role of rules of deduction in an axiomatic system, although certainty on this point is made difficult by the fact that we know that not all the stated rules of the Stoic system have come down to us. Finally, while Aristotle stated his syllogisms as logical laws, the Stoics set out their axioms and theorems as inference schemes, in the fashion of the hypothetical syllogisms stated by Theophrastus.

The Stoic system consisted of five *undemonstrated* inference schemes (sometimes called *indemonstrables*) which constituted its axioms, together with four rules by which other inference schemes could be proved from the undemonstrateds. Only two of these rules have survived.

The undemonstrated inference schemes are:

(1) If the first, then the second; but the first; therefore the second.
(2) If the first, then the second; but not the second; therefore not the first.
(3) Not both the first and the second; but the first, therefore not the second.
(4) Either the first or the second; but the first; therefore not the second.
(5) Either the first or the second; but not the second; therefore the first.

It will be noticed that for (4) to be a valid form of inference, the disjunction in the first premiss must be exclusive. We may therefore assume that it is intended to be exclusive in (5) also, even though (5) would be valid if the disjunction were there taken as inclusive.

Of the four rules of the system, only two have survived. The first, which is transmitted by Apuleius, can be stated thus:

> If a third is deduced from two propositions, then either of them together with the negation of the third yields the negation of the other.

The third Stoic rule can be stated in this fashion:

> If a third is deduced from two propositions, then, if one of the two is deduced from some fourth, the fourth together with the other of the two yields the third.

There is some reason to believe that one of the missing rules was the so-called *dialectical rule* which entitles one to insert as a premiss anything that can be deduced from some of the stated premisses. It is instructive to

compare the two rules which have survived with the propositional laws on which Aristotle relied in his proofs. The third Stoic rule will be seen to be the one underlying Aristotelian proof by direct reduction, and the first to be that underlying proof *per impossibile*.

It is quite clear that the Stoics understood the nature of the variable well enough to see that *any* proposition or propositional form, whether simple or complex, can be substituted uniformly for any propositional variable in a valid inference scheme without impairing its validity. But we do not know whether they had a rule to license such substitutions. On the whole, it seems unlikely that they did have one.

To illustrate the derivation of further inference schemes from the axiomatic ones, consider this case with three premisses:

(1) If both the first and the second, then the third.
(2) Not the third.
(3) The first.
Therefore, not the second.

Now premisses (1) and (2) are a substitution instance of those of the second undemonstrated, and therefore yield the conclusion:

(2') Not both the first and the second.

We use the dialectical rule to insert (2') as a premiss. Then from (2') and (3), the third undemonstrated gives the conclusion, 'Not the second'. So it has been shown that that conclusion can be deduced within the Stoic system from premisses (1), (2) and (3), and the given inference scheme is thereby proved.

In antiquity, the Stoic logicians had a reputation for excessive formalism and an interest in trivia, a view which has sometimes been echoed by modern commentators. While there may have been some grounds for such a view of them, it appears that this reputation was at least partly earned by their preparedness to consider forms of inference which others regarded as trivial. However, these forms of inference could be formulated in their system of propositional logic, and a modern logician is more likely to regard the fact that they took notice of them as evidence of a proper concern for the *formality* of formal logic. Two of these 'trivial' forms of inference are the *duplicated* and *tautologous* forms. A duplicated inference has a duplicated conditional (such as 'If it is day, then it is day') as a premiss; and a tautologous inference has as conclusion the same proposition as one of its premisses. The inference scheme:

If the first, then the first; but the first; therefore the first.

has both these features. That the Stoics were criticised by the Peripatetics (and also by Apuleius) for being concerned with such things may reflect

a fundamentally different view of the place and role of formal logic. While the Peripatetics presumably regarded formal logic as an interesting theoretical study, and the existence of the *Prior Analytics* is strong evidence for that, their basic view of logic was as an *instrument* for use in philosophy and the sciences generally. But the Stoics, from the very beginning, regarded logic as one of the three main divisions or *parts* of philosophy, and their awareness of its instrumental aspect did not detract from their view of it as an autonomous theoretical study.

CHAPTER FOUR

THE CHARACTER OF THE *PERI HERMENEIAS*

We shall now describe and discuss some salient features of the *Peri Hermeneias* with a view to exhibiting the character of the work. We shall say more than we did in Chapter 1 about the scope of the *Peri Hermeneias*, and discuss some of the central logical concepts which Apuleius deploys in it. The latter discussion focuses on three concepts—proposition, conjugation and collection—which lie in or near to the conceptual foundations of the work. Our discussion is intended not merely to pave the way to the *Peri Hermeneias* itself, but also to reveal some of its strengths and weaknesses as a logical treatise and those of its author *qua* logician.

The Scope of the Work

At a superficial level, it is quite easy to define the scope of the *Peri Hermeneias*, and to that extent indicate its character, by listing the main topics treated. So, Chapters I–IV treat propositions, their classification, and the nature of predicative (i.e., categorical) propositions; Chapters V–VI treat relations of opposition and equipollence between predicative propositions, as well as conversion; and Chapters VII–XIV treat the theory of the assertoric syllogism, although Chapter XIII is largely taken up with comments on the views of other logicians.

Such a description inevitably leads one to identify the logic of Apuleius as Aristotelian—and quite correctly in the sense that the matters listed are precisely those treated by Aristotle himself in parts of his *De Interpretatione* and *Prior Analytics*. Indeed, the Peripatetic nature of the material has disturbed some writers because Apuleius described himself as a Platonic philosopher, and, as we noted in Chapter 2, it has been used as a ground for denying that the *Peri Hermeneias* can be by Apuleius or constitute the third part of his *De Platone*. These disturbances and doubts appear to rest on a curiously literal reading of "Platonic"—curiously literal, that is, when one considers that five centuries had elapsed between the times of Plato and Apuleius. But in any case there is a great difference between saying that Apuleius's logic is Aristotelian, because the topics treated are Aristotelian, and thinking that the character of the *Peri Hermeneias* is caught adequately by describing it *simply* as an exposition of Aristotelian logic. Such a simple characterisation of the work would presuppose a view of ancient formal logic as static, a view comparable to the long-

discredited one that medieval logic was nothing but a prolonged reworking of Aristotle. It would also put all the weight on the matter and none on the method, thus directing the attention away from one area of possible innovation. It would also neglect not only those points which have made the *Peri Hermeneias* occasionally useful to students of Stoic logic, but also a number of other features which may be associated with those points.

A truer characterisation seems to result if one says that the matter of the work is mainly, though not entirely, Aristotelian, but that the presentation of the Aristotelian material is informed by, among other things, Apuleius's knowledge of Stoic logic (which seems to have been more influential than his acquaintance with the post-Aristotelian Peripatetics). Even though there are passages which pay homage to Aristotle, and although fundamental conceptual fidelity to Aristotle seems to have had a high priority, Apuleius's strategies are often not at all those of Aristotle. Nor can all the peculiarities of the work be ascribed to the difficulties of rendering Greek logic into Latin. Some of those difficulties had been tackled well before Apuleius's time, and he handles the remaining ones quite well enough to suggest that the general character of the *Peri Hermeneias* owes more to the fact that logic had already been developing for nearly five hundred years when this work was written.

As some, even if only partial, support for the generalisations just offered, we shall draw attention to a few specific passages in the *Peri Hermeneias*. Some further support for them may be derived from points to be raised in the following sections of this chapter.

In this connection, P.H.I contains material of particular interest. In the first place, the opening sentence expresses a quite standard Stoic division of philosophy into three parts, "the natural, the moral and the rational, in which is contained the art of arguing [*ars disserendi*]". For present purposes, the importance of this is not so much that the division is Stoic as that it places the announced subject of the *Peri Hermeneias* as a *part* of philosophy. There is no hint here of any Aristotelian stress on logic as an instrument: it is simply treated as an autonomous part of philosophy as a whole. Indeed, if we do take the *Peri Hermeneias* as the third part of *De Platone*, then the overall structure of that work mirrors this same view of logic and its place.

The main task of P.H.I is to introduce the basic propositional concept. At the end of the chapter, the term *propositio* is adopted as a technical label, thus beginning, as far as the extant literature goes, the long history of "proposition" as a name for what is true or false. (Although the word *propositio* had already been in use as a logical term in Latin, it did not have this particular sense in any work earlier than the *Peri Hermeneias*.)

But what is of interest here is not the technical term chosen, but the way the concept is introduced. Apart from the fact that Apuleius takes much more care than Aristotle at this point, the feature of the introduction to which we want to draw attention is this: Apuleius gives a basic and general account of what a proposition is by pinning down the statemental kind of speech [*oratio pronuntiabilis*], which "expresses a complete meaning" and is the only kind of speech "that is subject to truth or falsity". This is done in a way which catches what is at the core of both the classic Greek propositional concepts—the Aristotelian *protasis* and the Stoic *axioma*—and so cuts across the distinction between them. It is this core notion which is identified as a *propositio* at the end of P.H.I, and it is not until P.H.VII that it is finally made quite clear that *propositio* is Apuleius's Latinisation of *protasis*. All that we have done here is to describe the moves in P.H.I in a quite general way, aiming only to call attention to the way Apuleius proceeds in introducing his basic propositional concept. A more detailed examination of this topic is reserved for the next section of this Chapter.

If one considers the two points we have made about P.H.I—the Stoic placing of logic in philosophy and the way that *propositio* is introduced—one might wonder whether the *Peri Hermeneias* was begun with the idea of writing a much more comprehensive handbook of logic than it turned out to be. The very short chapter, P.H.II, makes that conjecture all the more tempting. In that chapter, Apuleius draws a distinction between simple predicative propositions and composite "substitutive or conditional" ones. In the last sentence of P.H.II, he says:

> We shall now go on to talk about the predicative proposition, because it is prior by nature and occurs as an element of the substitutive.

It is very tempting to see the "now" [*nunc*] as implying a subsequent "later". But there is certainly no evidence to suggest that Apuleius did go on later to discuss the logic of compound propositions, but that we have lost the latter part of the work. All that can be said without embarking on the seas of pure conjecture is that all the material in P.H.I and II is *consistent with* his having begun with a plan to deal first with Aristotelian logic and then to go on to treat propositional logic. On the other hand, however, we must bear in mind that the propositional logic would presumably have been Stoic logic, of which Apuleius is often fairly critical.

Two further passages worth noting here are in P.H.VII and P.H.XII. In the former, the distinction between the figures of the syllogism (*formulas* in Apuleian terminology) is drawn in a way which is much more purely structural than one finds in Aristotle. Apuleius rests the distinc-

tion purely on the possible positions of the middle term. In view of this more structural approach, one might expect Apuleius to have noticed the possibility of a fourth formula. That he did not do so may be attributable to excessive fidelity to Aristotle. However, he associates with the distinction an argument, in terms of "the worth of the conclusions" deducible in each formula, for the order of the formulas, and this might be taken as an implicit argument, whether sound or not, for there being only three formulas. In P.H.XII, Apuleius points out correctly that proof *per impossibile* rests on a rule of propositional logic, which he states and identifies as the first rule of the Stoic system. As we suggested earlier, this shows a degree of logical awareness which is in advance of Aristotle's on the same point.

Both the passages just mentioned are parts of an exposition of Aristotelian logic—but they are hardly parts of an *Aristotelian* exposition of it. Like the material in P.H.I, they prevent an assessment of the *Peri Hemeneias* as being merely Aristotle in Latin dress, and are indications that it exhibits a quite expectable degree of progress in logical thought.

In fact, signs of progress in logic are to be found throughout the *Peri Hermeneias*, some at the heuristic level and others at the theoretical level. The most striking example of the former is the introduction in P.H.V of the Square of Opposition diagram to map the logical relations between the four categorical propositional forms. At the theoretical level, progress in logic often takes the form of advance to a new level of generality. As an example of this, we may mention the introduction of the terms "quantity" and "quality" in P.H.III. Paul Thom reports[1] that this is the first introduction of this pair of determinables, of which the Aristotelian pairs "universal", "particular" and "affirmative", "negative" are, repectively, determinates.

Some Key Concepts

Further insight into the character of the *Peri Hermeneias* can be obtained from an examination of some of the features of a handful of the concepts which are fundamental to Apuleius's logical thought. The three which appear most basic are *proposition*, at which we have already looked briefly, *conjugation* and *collection*. We shall say something about each of these in turn, though without trying to place them in the logical system of the *Peri Hermeneias* any further than is necessary to make them intelligible. They will be seen at work in the system in Chapter 6, below. Similarly, we shall introduce no more of the subsidiary Apuleian concepts and terms than

[1] Paul Thom, *The Syllogism*, Munich 1981, p.261, notes 10 and 11.

we need to at this stage. Our aim here is to focus attention on those features of the basic notions which will show something of the general character of the work, including its strengths and weaknesses.

Propositions

Since formal logic is concerned with the principles which govern what follows from what, the nature of what follows and what it follows from is of central importance. This means that the concept of the proposition is fundamental in logic, whatever technical term is attached to it, and a logician's conception of the proposition is therefore likely to determine how he proceeds in his logical work. This can operate in two ways. On the one hand, the level and type of analysis of propositional structure that is adopted will determine the branch of logic being worked on. So, for example, Aristotle's analysis of simple propositions as combinations of two terms makes his logic a logic of terms. Similarly, an analysis of propositions in terms of relations between classes will produce a logic of classes; the Stoic concentration on the ways in which propositions may be constructed out of elements which are themselves propositions meant that they produced a propositional logic; and so on. On the other hand, this type of determination is in a sense secondary, because it relies on a pre-existing conception of the proposition to which some kind of structural analysis can be applied. The more fundamental kind of determination, which springs from the clarification of the pre-existing conception of the proposition in general, is harder to pin down—not least because not every logician makes this conception very clear or even attempts to clarify it. For example, Aristotle, in his *Prior Analytics*, does not make it clear at all, but proceeds, in his account of the nature of a premiss, straight to the level of formal analysis of structure.

It is a theoretical merit of the *Peri Hermeneias* that the two levels of conception of the proposition are clearly displayed, and in the right order. As we have already indicated, P.H.I presents the fundamental view of the general nature of the proposition that is to be be taken in the work. In P.H.II—IV, what falls under this general account is considered from an analytical structural point of view, in which the restriction to predicative propositions and the analysis given of them determines the main topic of the work, *viz.*, the logic of terms.

In P.H.I, a proposition is defined as a speech [*oratio*], or in modern terms a speech-act, which has certain characteristics. This means that propositions are tied very closely to utterances, and are therefore seen as part of the stuff of human discourse, and particularly of argumentative discourse. This very direct connection with discourse means that

Apuleius (in common with other ancient writers, Aristotle in particular) conceives of the proposition more dynamically than does a logician who sees propositions as, say, meanings of sentences. For Apuleius, propositions are what human talkers entertain, consider and, above all, accept or reject, thereby committing themselves to accepting or rejecting other propositions. It is, perhaps, worth underlining the closeness of the ties between Apuleian propositions and utterances by pointing out that the form of words used is crucial to the identity of the proposition. This is made quite clear in P.H.V, where he says that equipollent propositions are ones "which have just as much power in another form of words, and which become true at the same time or false at the same time, one on account of the other of course". When we put this together with P.H.I, an Apuleian proposition is an utterance, made using some particular form of words, used statementally, and expressing a complete meaning. It is also made clear that it is either true or false.

In P.H.I, Apuleius says that a proposition is what he himself had previously called a *protensio* and a *rogamentum* (a term which occurs twice more in the *Peri Hermeneias*), and what Sergius called an *effatum*, Varro a *proloquium*, Cicero an *enuntiatum*, and "the Greeks" called a *protasis* and then an *axioma*. We have already remarked that the proposition as introduced in P.H.I is what is at the core of both the Aristotelian *protasis* and the Stoic *axioma*. The cash value of this remark becomes more evident if we set down together definitional accounts of the Apuleian, Aristotelian and Stoic propositional concepts, thus:

propositio—an *oratio* which is statemental and expresses a complete meaning.
protasis—a *logos* which affirms or denies one thing of another. [From *Prior Analytics* I,1.]
axioma—a complete *lekton* which is assertoric in itself.[2]

Leaving aside the rather subtle differences between an *oratio*, a *logos* and an *axioma*, it is clear that all the propositional concepts cover semantically independent units which are assertoric or statemental in character.

Given all this, it might be thought that, since *effatum*, *proloquium* and *enuntiatum* are all Latinisations of *axioma*, so are the Apuleian *protensio*, *rogamentum* and *propositio*. Of course they are, to the extent already indicated above. But in P.H.VII he makes it quite clear that his *propositio* is a Latinisation of *protasis*. In *Topics* 101b, Aristotle says that a *protasis* has the form 'Is A a B?', and this is mirrored exactly in P.H.VII where Apuleius says that "if someone were to pose the question: *Is every*

[2] Sextus Empiricus, *Hyp. Pyrrh.* II,104; Diogenes Laertius, *Vitae* VII,65.

honourable thing good?, it is a proposition''. If the person asked assents, it becomes an acceptance [*acceptio*], but Apuleius then notes that the acceptance *Every honourable thing is good* is commonly called a *propositio*. The Apuleian strategy thus seems to have been to introduce a basic propositional concept in P.H.I, in a way which would be consistent with the Aristotle of the *Prior Analytics*, but leaning for heuristic purposes on the Stoic concept, and which could later be adopted without strain to fit the Aristotle of the *Topics*. There can be no real doubt that from the start he intended *propositio* to be a Latinisation of *protasis*; and since *protensio* and *rogamentum* are evidently Apuleian synonyms for *propositio*, the same can be said about them.

It will be evident from what has been said that the Apuleian concept of a proposition is quite complex. This springs in part from the fact that *propositio* is intended to be a Latinisation of *protasis*, which was, from birth, a double-aspect concept. It has a statemental aspect which is evident in the *Prior Analytics* account, when its functional role is that of a premiss, and an interrogative aspect, evident in the *Topics* account, when its functional role is that of eliciting agreement which will produce a premiss. But Apuleius also frees his *propositio* from the functional limitations of the *protasis*, which arose from Aristotle's attempts to distil his basic propositional concept from a very concretely conceived base in disputatious dialogue, so that *propositio* can take on the general statemental role of the Stoic *axioma*. This comes out very clearly from the account in P.H.I, and also from two examples from P.H.X. The standard Apuleian term for a premiss in a syllogism, when that is seen as a way of proving its conclusion, is ''acceptance'' [*acceptio*]. But when he conceives of a premiss a little more abstractly, as one of the trio of propositions which make up a syllogism, he calls it a *propositio*—cf. the start of P.H.X, where a certain mood is said to be reducible to the second indemonstrable ''by conversion of its second *propositio*''. And at the end of P.H.X, he states that another mood can be proved only *per impossibile* and says that he will deal with this *propositio* later. In this case, the term is being used of a statemental utterance taken quite generally. It is again the *propositio* we first met in P.H.I. But, as Apuleius says at the end of P.H.VII, ''enough has surely been said about these matters''—enough anyway to exhibit the complexity of Apuleius's fundamental conception of the proposition.

Having completed the preliminary clarification of the basic propositional concept in P.H.I, Apuleius is able to go on to talk about the structure and classification of propositions. We shall sketch out the key points of his discussion.

In P.H.II, he divides propositions into the "predicative" and the "substitutive or conditional". Despite the apparent synonymy of "substitutive" and "conditional", it seems clear enough that all compound propositions are substitutive. At this point Apuleius announces that he will now go on to talk about the predicative proposition which, being simple, is logically prior and is what substitutive propositions are composed of.

At this point one might expect an analysis of the predicative proposition as a combination of terms. But in fact the distinctions of quantity and quality are drawn first. Some predicative propositions are universal, some are particular. Some are *dedicative*, "which affirm something of some thing"; some are *abdicative*, "which deny something of some thing". This is done in P.H.III, and the structural analysis of the predicative proposition is left until P.H.IV. We shall look at the reason for this apparently odd order of treatment after sketching the structural analysis given in P.H.IV, which is, of course, an integral part of the total Apuleian elaboration of the concept of a proposition.

The basic structure of the predicative proposition turns out to be: Noun + Verb. The nominal part is called the *subjective* and the verbal part is called the *declarative*. As the theory of the syllogism is developed later in the *Peri Hermeneias* these terms are used in a way which matches Aristotle's use of 'subject' and 'predicate' very well, but it is a matter for further investigation just how closely the two pairs of concepts really match one another. Although we shall not pursue this matter in any detail here, we shall make a few remarks on it—enough, at least, to indicate why we think there are problems to be resolved.

The authority cited for the Noun + Verb structure is not Aristotle, but Plato in the *Theaetetus*. (Presumably the reference is to *Theaetetus* 206D, although *Sophist* 262C might have served Apuleius just as well or better.) Furthermore, the example given is the singular proposition *Apuleius argues*, of which it is said that *Apuleius* is the subjective and *argues* is the declarative. This does not look much like the Aristotle of the *Prior Analytics*, who, being wedded to a two-term analysis of propositional structure, has little truck with singular propositions. But it can be argued that in *De Interpretatione*—the original '*Peri Hermeneias*', so to speak—Aristotle adopted just the Platonic view of the *Theaetetus* and *Sophist*, including Plato's terminology.[3] In that case, Apuleius might be con-

[3] For discussion of this point, see P.T. Geach, "History of the Corruptions of Logic", Inaugural Lecture, University of Leeds, 1968, and reprinted in P.T.Geach, *Logic Matters*, Oxford 1972. For a different, and more recent, discussion of the *onoma-rhêma-logos*, see L.M. de Rijk, *Plato's Sophist. A Philosophical Commentary*, Verhandelingen van de Koninklijke Nederlandse Akademie van Wetenschappen, afd. Letterkunde N.R., 133, Amsterdam 1986.

strued as being faithful to at least the early Aristotle, and, indeed, there are other points in P.H.IV which are reminiscent of *De Interpretatione*. But since Aristotle changed his analysis between writing that work and the development of the theory of the assertoric syllogism in the *Prior Analytics*, the problem of the closeness of match between the Apuleian concepts and the Aristotelian 'subject' and 'predicate' persists.

One point which should be noted is that the Noun + Verb analysis of P.H.IV is not to be confused with the Name + Predicate analysis which underlies the modern Predicate Calculus. Apuleius makes it quite clear that the subjective part can be a general noun or noun phrase, despite his opening example, *Apuleius argues*. He also goes on to discuss the relative extensions of the subjective and declarative parts, that of the subjective being said to be smaller—except when what is declared of it is a "property" [*proprium*], taken in the Aristotelian sense of "proper accident" (cf. *Topics* I,5,102a). In a brief remark in P.H.IV, and more extensively in P.H.VI, the relative extensions of subjective and declarative are made the foundation of the theory of conversion. It seems possible that this material furnishes the clue to how Apuleius sought to reconcile the Noun + Verb analysis with the requirement of the interchangeability of subjective and declarative, which must be satisfied if a theory of the assertoric syllogism is to be constructed. If this is so, then P.H.III and IV can be seen as an attempt to re-think the philosophical underpinnings of assertoric syllogistic.

In view of this, the apparently odd order of P.H.III—IV, in which quantity and quality are treated before the introduction of the Noun + Verb structure, and thereby of the subjective and declarative, can be made intelligible. The clue lies in what seems at first sight to be a digression in P.H.III, in which Apuleius argues against the Stoic view that the only genuinely abdicative propositions are those in which the negative particle is prefixed to a complete proposition, and so is not a part of either the subjective or declarative. In order to make sense of Aristotelian negative propositions within the subjective/declarative account, Apuleius had to ensure that propositions could be abdicative by having a negative particle in either the subjective or the declarative part. Such subjectives and declaratives are discussed in P.H.IV, and are there said to be "indefinite", since they do not say what a thing is but only what it is not. Having dismissed the Stoic view in the simple context of P.H.III, he is able to present something like Aristotelian orthodoxy in P.H.IV without any strain. The apparently odd order is, in short, a matter of expository tactics. This does not, of course, rule out the possibility that it is also part and parcel of the re-thinking suggested earlier.

Conjugations

> A conjugation [*coniugatio*] of propositions may be said to be their union [*conexio*] through some common particle, by which they are joined together; for thus they are able jointly to determine one conclusion. [P.H.VII]

What Apuleius is defining here seems to be simply what we might refer to, in more familiar language, as a pair of premisses of an assertoric syllogism. (In saying that, we are, of course, assuming that the propositions united in a conjugation are predicative, and that there are just two of them. These assumptions are justified by both the general context and the immediately following sentence.) However, the Apuleian concept is not without some complexities, and, in view of its importance in the exposition from P.H.VII on, we need to explore it further.

If one examines the definition quoted above, it is immediately clear that it stresses the role of the "common particle" (the middle term, in Aristotelian language) in a quite careful fashion. Apuleius says only that it is this common particle which makes the propositions in the conjugation *able to* determine a conclusion. In that sense it is a little misleading to say, as we did above, that a conjugation is a pair of premisses. What one should say is that it is a pair of propositions which have a structural feature which makes it *possible* for them to be a pair of premisses, in the sense of a pair of predicative propositions from which something follows logically. Even this subtly misrepresents the Apuleian concept as defined, since, if we take the defining words strictly, the conjugation is not to be identified with the propositions which are its constituents, but with their union "through some common particle". However, Apuleius frequently speaks as if the conjugation is identified with the constituent propositions.

Apuleius's use of "particle" is rather varied in the *Peri Hermeneias*, but in the sentence immediately following the definition he makes it clear that this common particle must be either a subjective or a declarative—"It is necessary that this common particle should be either subjective in each proposition or declarative in each, or subjective in one and declarative in the other". These possible positions of the common particle are then used to distinguish the three *formulas* (corresponding to Aristotle's three figures).

Sullivan says[4] that Apuleius uses "conjugation" to refer to a conjunction of acceptances. It is true that he does so frequently, which is not surprising since an acceptance is a conceded proposition; but, from a definitional point of view, it is worth noting that the definition is in terms of

[4] Mark W. Sullivan, *Apuleian Logic—the nature, sources, and influence of Apuleius's Peri Hermeneias*, Amsterdam 1967, p.78.

propositions rather than acceptances, and that this had to be so since the concept of an acceptance is introduced later in the work than that of a conjugation. In fact, 'conjugation' appears to be one of Apuleius's more purely structural concepts, and whether a pair of propositions constitutes a conjugation will be independent of what anyone concedes or rejects.

Although "conjugation" is defined without reference to the formulas, which are distinguished in terms of the positions of the common particle in conjugations, it becomes clear that Apuleius generally thinks of a conjugation as a conjugation in this or that formula. This is quite natural, since the common particle must occur in one set of positions or another—so a conjugation consisting, say, of two universal dedicatives will constitute a possible pair of premisses in the first formula if the common particle is declarative in one and subjective in the other; in the second formula, if it is declarative in both; and in the third formula, if it is subjective in both. This prompts the question whether there are sixteen or forty eight conjugations (or, to be absolutely precise, *types* of conjugation, since presumably a specific conjugation's identity is determined by the specific propositions united in it). The general definition suggests that there are sixteen, since each of the four types of proposition (universal dedicative, universal abdicative, particular dedicative and particular abdicative) can be paired with a second proposition of any of the four types. So, provided that each pair is united by a common particle, it will be a conjugation, no matter where the common particle occurs in the propositions. However, Apuleius states explicitly in P.H.XIV that there are sixteen conjugations in each formula and forty eight in all. This means that the formula-determining positions of the common particle must play a part in constituting the identity of a conjugation. It therefore seems that Apuleius's working notion of a conjugation became not the very general structural one caught in the initial definition but the more complex notion of a 'conjugation in a (particular) formula', which is never explicitly defined.

Putting the points just made in a concrete way, they come to this. Consider these pairs of propositions:

(i) Every just thing is honourable.
Every honourable thing is good.

(ii) Every just thing is honourable.
Every good thing is honourable.

According to the definition in P.H.VII, since each is a pair of universal dedicatives, (i) and (ii) are instances of one conjugation (type). But according to Apuleian practice, they are distinct, (i) being an instance of

a conjugation of two universal dedicatives in the first formula, and (ii) being an instance of a conjugation of two universal dedicatives in the second formula.

There is, however, a further complication in the Apuleian practice which is less explicable than the preceding one. In P.H.X, while discussing the moods of the second formula, Apuleius remarks that the second mood, *No base thing is honourable, every just thing is honourable; therefore no base thing is just*, "does not differ in conjugation" from the first mood, *Every just thing is honourable, no base thing is honourable; therefore no just thing is base.* It is clear that Apuleius thinks that the order of the proposition-types in the conjugation is irrelevant to its identity. But if order-irrelevance were made part of the definition of a conjugation-in-a-formula, there would be not sixteen but only ten conjugations in each formula. To complicate matters further, Apuleius does not apply the order-irrelevance rule in the first formula. If he did, there would be only four distinct conjugations among the nine valid moods, and not six conjugations, as he asserts that there are. On the other side, if he did not apply it in any formula, there would be more distinct conjugations represented in each of the second and third formulas than he says that there are. It appears then that Apuleius was not perfectly clear about his working concept of a conjugation.

Although we can hardly be dogmatic about it, it is *possible* that Apuleius was actually clearer about his working concept than we have just suggested, and that his varying attitudes to the order of statement in different formulas are explicable. The definition in P.H.VII says that the first formula is that in which the common particle is subjective in one proposition [*in altera*] and declarative in the other [*in altera*], which makes no distinction in order of statement. But every mood of the first formula is in fact set out so that the common particle is declarative in the first proposition and subjective in the second. To change the order of statement would reverse this situation (though it makes no such difference in the second and third formulas). We therefore suggest, in an entirely conjectural way, that Apuleius may well have been aware of the possibility of the fourth formula, in which the common particle would be subjective in the first and declarative in the second. But that demands a further conjecture that he had unstated objections to the whole notion of a fourth formula, in order to explain the way he elided it by conflating its definition with that of the first in P.H.VII. On the other hand, we cannot rule out the possibility that the conflation simply reflects a failure to pursue the structural approach rigorously, and that the way the moods of the first formula are set out is accidental—which leaves us with an Apuleius who has failed to clarify his working conception of a conjugation.

Collections

One of Apuleius's neater pieces of terminology is his use of "collection" [*collectio*] to refer to a syllogistic inference. *Collectio* is a straightforward Latinisation of Aristotle's *syllogismos*, and, in fact, the English version "collection" brings immediately to mind the leading idea intended by both Aristotle and Apuleius—that the inference consists in collecting up or bringing together the extreme terms in the premisses, or the subjective and declarative parts which do not constitute the common particle in the conjugation. The regular matching form of description of a particular collection is that a certain conjugation "brings together" [*conducit*] a certain proposition as conclusion. So, for example, he says in P.H.IX: "The fourth mood [in the first formula] is that which brings together directly a particular abdicative from a particular dedicative and a universal abdicative". A rather less happy piece of terminology is his standard use of *conclusio* as a synonym for *collectio*, when he also uses *conclusio* on some occasions to mean exactly what we would understand by "conclusion".

Leaving matters of terminology on one side, we turn to the more important matter of the definition of "collection". In doing this, the author of the *Peri Hermeneias* explicitly follows Aristotle's definition of a syllogism:

> Moreover, that whole form of reasoning which consists of acceptances and a conclusion, and is called a collection or an inference [*collectio vel conclusio*], can most conveniently be defined thus, following Aristotle: *A speech in which some things having been conceded, something other, beyond those which have been conceded, follows by necessity, but through those very things which have been conceded.* [P.H.VII]

This definition is virtually a translation of one of Aristotle's less happy attempts at defining a logical term.[5] It might pass as an attempt—even a good attempt—to define deductive inference in general, but it fails completely to pick out the characteristic features of syllogistic inference, whether assertoric or modal. Apuleius, unlike Aristotle, embarks immediately on a lengthy and fairly systematic explanation of the successive clauses in the definition, but he does not succeed in remedying its defective nature, even with respect to assertoric syllogisms. In summary form, the points he makes in his explanation are these:

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[5] Aristotle, *Prior Analytics* I,1,24b; similarly in *Topics* I,1,100a. A Latin version of the passage from the *Topics* is to be found in Aulus Gellius, *Noctes Atticae* XV.xxvi.

(i) The speech mentioned must be declarative.
(ii) There must be more than one acceptance (premiss).
(iii) The conclusion must not be something explicitly conceded in the the acceptances—i.e., it must not be a repetition of a premiss.
(iv) The conclusion must follow by necessity—i.e., the inference must be deductive and not inductive.
(v) The premisses must be relevant to the conclusion.

Given the difficulties which have beset later attempts to explicate the deductive/inductive distinction and the notion of relevance, it should not be surprising that Apuleius's explanations of (iv) and (v) are clumsy and inadequate. What is more important is that he felt the need to attempt them at all, and that is, perhaps, true of all the points in the explanation. Yet there are puzzling aspects of the explanation, not least that he did not make a better job of it. The last remark is best supported by reviewing the things he fails to say, even though he had the materials to say them.

He tells us that the speech, and so the acceptances, must be statemental, but not that they must be predicative, even though the predicative/substitutive distinction was drawn as early as P.H.II. He tells us that there must be more than one acceptance, but not that there must be exactly two; and he does not say that the acceptances must contain a common particle, even though this had been stressed in the definition of a conjugation only a page earlier in the text. Had he done these things, which seem to have been well within his power, he could even have improved on the sketchy way in which he makes point (v), on relevance, by saying that the conclusion must also be predicative and that its subjective and declarative must occur in the acceptances.

Another somewhat puzzling aspect, if we are to take the definition of a collection to be the definition of an assertoric syllogism, is that point (ii) is argued in terms of an example from propositional logic rather than in terms of any part of the logic of predicative propositions. Point (iii), against the conclusion's being a repetition of a premiss, although made in a quite general way, is followed (and, on the face of it, illustrated) by a number of cases drawn from Stoic propositional logic, which comes in for some rough treatment here. [We address some of the problems about this passage in Appendix C.]

Fidelity to Aristotle could explain the adoption of his definition of a syllogism as the definition of a collection. But it can hardly explain why the glosses, once embarked on, fail to tie the collection down to the Aristotelian syllogism. To explain this, we are once again forced into the rather muddy waters of conjecture. It is at least possible that Apuleius

saw, as Aristotle seems not to have seen, that the Aristotelian definition of a syllogism serves better to define deductive inference in general than it does to define the quite special deductive form of the assertoric syllogism. If this is so, then we cannot discount the possibility that "collection", as *defined* in P.H.VII, is intended to cover "deductive inference" taken quite generally, and that the syllogistic type of deductive inference is seen as just one special type of collection. Earlier in this Chapter, we remarked that all the material in P.H.I and P.H.II is consistent with the idea that Apuleius began with a plan to write a more comprehensive treatise on formal logic than the *Peri Hermeneias* turned out to be. It is possible to see the generality of the definition of "collection", and the failure to tie it down in the ways we have indicated, as a further remnant of such a planned enterprise, and not as a mere failure of logical acumen. The temptation to see it in such a light is heightened by the fact that immediately after the explanation of the definition, Apuleius goes on, at the start of P.H.VIII, to say:

> Now it is time to treat in which moods and conjugations genuine conclusions of the predicative kind may occur ....

He has now returned to the assertoric syllogism—i.e., to collections in the narrower sense which he could have defined in P.H.VII. The sharpness of the transition from the general to the special suggests very strongly that the generality of P.H.VII was quite deliberate, and that the treatment of collections there, and the discussion of the Aristotelian definition, represents an Apuleian attempt to re-think in more general terms the foundations of Aristotle's logic of the assertoric syllogism.

To end this discussion of Apuleius's concept of a collection, we mention some ways in which the Apuleian way of setting out syllogisms is at variance with that of Aristotle.

Whereas Aristotle sets out a syllogistic schema as a logical law of a conditional kind, which will license the passage from the assertion of the premisses to the assertion of the conclusion, Apuleius sees a collection directly as an inference-pattern. This is signalled by his regular use of "therefore" [*igitur*] to link premisses and conclusion, thus following the usage of both Theophrastus and the Stoic logicians. Since the same forms of inference are valid whichever style is adopted, this difference has no formal import; but it does reflect, whether consciously or not, a difference at the conceptual level.

Again, Apuleius does not make use of variables in the manner of Aristotle (and the Stoics), although he shows in P.H.XIII that he is aware of that practice. In running through the collections in each formula, his standard method is to *describe* the general form, saying what the

conjugation is and what conclusion is brought together by it, and then to give an example of a collection of the form described. This pattern is set in the opening sentence of P.H.IX:

> So in the first formula the first mood is that which brings together directly a universal dedicative from universal dedicatives, e.g., *Every just thing is honourable, every honourable thing is good; therefore every just thing is good.*

The role of the example here has to be seen as that of a representative example—any other inference which has the same form will be an instance of the first mood in the first formula. A further point of regular divergence from Aristotle is also evident in the passage just quoted. The subjective of the conclusion is drawn from the first-stated premiss, and the declarative from the second, whereas Aristotle regularly states his premisses in such an order that the reverse will be the case.

CHAPTER FIVE

ASPECTS OF TECHNICAL WRITING IN THE *PERI HERMENEIAS*

Our task here is neither to place the *Peri Hermeneias* in the *genre* of Latin technical writing, although it is obviously an example of that *genre*, nor to set out an Apuleian glossary. The former would involve a substantial literary study which lies outside the scope of this introduction; and the latter will be found in Appendix A. What we shall do is to discuss some ways in which Apuleius introduces and uses technical terms, and a selection of cases in which it seems possible to recapture how he came to choose a particular Latin word as a technical term. After that, we shall treat a number of puzzles clustering around the term "mood". In doing this, we shall draw attention, in a discursive context, to a number of further Apuleian logical terms and concepts. This handful of remarks should cast some further light on the character of the *Peri Hermeneias* and also on the process of Latinisation of Greek thought that was involved in writing it.

THE INTRODUCTION AND USE OF TECHNICAL TERMS

Apuleius usually introduces his technical terms fairly carefully, in the sense that he generally takes some effective steps to make their meaning clear at or near their first occurrence. In the last chapter we saw some examples of this in the cases of "proposition", "conjugation" and "collection". His clarifying devices range from attempts at more or less formal definitions (as with "conjugation" and "collection"), to descriptions of the use of the term (as he does in a complex way for "proposition", and more simply in other cases), to merely giving an example. The examples are important among the heuristic devices of the *Peri Hermeneias*, and are, of course, often used in conjunction with the other clarifying devices as well as alone. (We remark by the way that Apuleius, in common with many other Latin technical writers, such as the *agrimensores* or land surveyors, uses a simple *ut* as his standard way of introducing an example.)

The use of examples to clarify the meaning of newly introduced terms can be illustrated quite well from P.H.III, where the terms referring to the quantity and quality of propositions appear. The terms "universal" and "particular" are clarified only by giving an example—so, "some are

universal, e.g., *Every breathing thing lives*''—but ''indefinite'' is introduced by an example together with an explanatory remark:

> others are indefinite, e.g., *An animal breathes*—for this does not determine whether every or some [animal breathes] ...

The terms for the qualities of propositions, ''dedicative'' and ''abdicative'' are given a fuller clarification of the same kind:

> ... some are dedicative, which affirm something of some thing, e.g., *Virtue is a good*, for it affirms that goodness is part of virtue; others are abdicative, which deny something of some thing, e.g., *Pleasure is not a good*, for it denies that goodness is part of pleasure.

In each case, we are given a definitional remark, followed by an illustrative example, and then a further explanatory remark linked to the example.

It is worth noting that, although Apuleius was the first to introduce the terms ''quantity'' [*quantitas*] and ''quality'' [*qualitas*] as determinables for features of propositions, he does not define these, or even explain their use beyond what can be gathered from the explanations of their determinates. Neither could be described as a common or old-established word, since most of their known occurrences are at least post-Augustan; however both words were already in use in Latin, even though not with these senses, and Apuleius may have felt that they would therefore be intelligible enough to his readers without further explicit explanation, especially since he immediately gives an account of their various determinates. Those determinates—''universal'', ''particular'', ''indefinite'', ''dedicative'' and ''abdicative''—are simple Anglicisations of *universalis*, *particularis*, *indefinita*, *dedicativa* and *abdicativa*. These are all Latin words whose first recorded occurrence is in the *Peri Hermeneias* itself, or date from the same period, and so might well have seemed to Apuleius to be more in need of a careful introduction. This will not, however, explain why the two terms of quality, ''dedicative'' and ''abdicative'', receive a more elaborate treatment than the three terms of quantity.

The cases just discussed do not exhibit one quite common Apuleian feature, which was, however, present in the definition of a conjugation discussed at some length in the previous chapter. This feature is that Apuleius often signals the introduction of a technical term by using some part of the verb *dicere* or some other verb of saying or calling—''may be said to be'', ''is called'', etc. For example, in P.H.IV, we have that one part of a proposition ''is called [*nominatur*] the subjective''; in P.H.V, the universal propositions of opposite quality ''may be said [*dicantur*] to be inconsistent [*incongruae*] with one another''. The last-mentioned case also exemplifies two other features of Apuleius's practice. In the first place,

it is an example of an adjective which Apuleius will use as a noun whenever the context is suited by it. So, *incongruae* is used 'normally' as an adjective in the passage quoted, but in many other contexts the only sensible translation is "inconsistents", when the reference is to a pair of contraries and not to the relation between them. Secondly, *incongruae* is a case of a word with a common use, to which Apuleius gives a technical use, but which he still occasionally uses in its ordinary non-technical way to mean "opposites" in a quite general sense. It should, however, be said that Apuleius does not indulge in the mixture of technical and non-technical uses of the same word to any large extent. His terminological lapses tend, on the whole, to be more serious than that.

We have already seen, in the previous chapter, that although "conjugation" is introduced by a formal definition (signalled by *dicatur*), Apuleius goes on to use this term in ways which do not square with the definition. Moreover, again in P.H.VII, when he defines "collection", what is defined is "a collection or an inference" [*collectio vel conclusio*], which suggests that *conclusio* is a synonym for *collectio*. But at various points *conclusio* is also used to mean "conclusion" rather than "inference". Some of these uses occur before the definition of *collectio vel conclusio*, but some certainly occur after it. Of these, some are in P.H.VII itself in the rather curious remarks about the moods of the Stoics which appear in the explanation of the definition of *collectio vel conclusio*. Another case is found at the start of P.H.VIII, where the *conclusiones* mentioned are said to be "of the predicative kind". They must therefore be propositions and not inferences, and the word has to mean "conclusions". Two sentences later, we have translated *ratam conclusionem* as "valid conclusion", but in this case it would be at least possible to take it as "valid inference". However, in P.H.XII the *conclusio/illatio* contrast is maintained consistently, beginning with a clause in which both words occur: *omnis conclusionis si sublata sit illatio* ..., i.e., "for every inference [*conclusionis*], if the conclusion [*illatio*] were destroyed ...". The lapses in the use of *conclusio* may be due to the fact that *conclusio* already had an established use as referring to the conclusion of an inference, a use which dated from Cicero.[1]

In fact "conclusion" is not one of Apuleius's happiest concepts, from the point of view of terminological consistency. His standard term is *illatio*, but when this is defined in P.H.VII he also gives a synonym, *illativum rogamentum*:

> ...what is collected from acceptances and inferred, I call a conclusion or an illative proposition [*illationem vel illativum rogamentum*].

[1] See, for example, Cicero, *De Inventione* I. xxix. 45.

In fact, Apuleius never makes use of the synonym *illativum rogamentum*, although a few sentences further on he does use the adjectival part, *illativum*, on its own to mean "conclusion"—another example of what would normally be an adjective being given a technical use as a noun. Perhaps he thought better of making much use of his synonym; perhaps he included it along with *illatio* only for some now slightly obscure heuristic purpose.

There are other terminological lapses to be found in the *Peri Hermeneias*. A minor case is the unheralded appearance of *subneutra* in P.H.V to mean "alternate" (i.e., to refer to the contradictory of a proposition), and evidently as a synonym for his standard term, *alterutra*. This looks like a simple slip, perhaps a vestige of an earlier Apuleian attempt at Latinising the concept. Much more serious is the failure to define or explain "mood" [*modus*, sometimes *modulus*] at all, and the misdefinition of "directly" [*directim*] and "conversely" [*reflexim*]. Discussion of these cases would lead us beyond purely terminological matters, and is therefore postponed to a later section.

We have laid a good deal of stress on Apuleius's failings in this area; but that should not be allowed to obscure the fact that the author of the *Peri Hermeneias* is, on the whole, quite careful in both the introduction of technical terms, their choice and their consistent use thereafter. The most striking instance of this is his treatment of "proposition". It is almost certainly the most difficult item in the technical language of logic to introduce properly, and not a few modern writers of logic textbooks fall short of the standard achieved by Apuleius.

The choice of terminology

The technical terms used in the *Peri Hermeneias* often appear strange to the eye of a reader familiar with other treatments of Aristotelian logic. The extent to which these terms are peculiarly Apuleian, rather than reflecting a more or less standard Latin terminology of his day, is not always clear. We do know that the Latinisation of logical terms had been going on for a considerable time—the list of Latin synonyms for *propositio* in P.H.I is itself evidence of that—but it appears likely that Apuleius was something of an innovator in this area. Sometimes he seems to coin new terms, usually by adopting non-technical words for technical purposes, or forming a new word from an existing root; sometimes he takes over words which already had a use in logic, but gives them a twist of his own. (An example, though not a very happy one for Apuleius, of the latter practice is his adoption of *conclusio* as a synonym for *collectio*.) If one examines what may seem at first to be a rather strange word for Apuleius

to use, it is often possible to dispel the feeling of strangeness by constructing some plausible rationalisation of his choice, and at the same time to recapture some elements of the process of Latinisation of the concept. We shall discuss a few cases, bringing out the kind of considerations which probably influenced Apuleius in his choice of technical terms.

First, let us consider the group of three Apuleian propositional terms which occur in P.H.I—*protensio, rogamentum* and *propositio*. The last is, of course, not only the standard term adopted in the rest of the *Peri Hermeneias* but is also the real survivor, having passed into the Medieval logical vocabulary and then into French and English. Here we are concerned only with what might have made these words in turn seem to Apuleius to fit them for the job of being Latinisations of the Greek *protasis*. In considering this, we need to bear in mind the double-aspect nature of the *protasis*, as well as the roots of that concept in the context of disputatious dialogue, which limited its role to that of a conceded premiss.

The Apuleian *protensio* is transparently an attempt to mirror not only the sense of *protasis* but even its etymology. For just as the word *protasis* is derived from a Greek verb of holding out or offering, viz., *proteino*, so *protensio* is derived from the matching Latin verb *protendo*. We can see from this that what was uppermost in Apuleius's mind when he temporarily adopted the word *protensio* was the *protasis* as something held out to one's interlocutor for his agreement, which, once gained, would enable it to function as a premiss. This would fit very well with Aristotle's conception of the *protasis* in the *Topics*. But Apuleius makes it clear in P.H.I that the propositional concept he is after has being true or false as an integral part, a notion which tends to divorce the proposition from something which is at home *only* in the disputatious context. From this, it would appear that Apuleius might well have decided that *protensio* was *too close* to the very concretely conceived Aristotelian *protasis*. His Latinisation was too good a *translation* to fit what he really wanted.

Since it is most improbable that *rogamentum* alone among the derivatives of the verb *rogare* should have lost all connection with the central senses of that verb—to ask, to question, to ask for—we can conclude that a *rogamentum* is something which has at least an interrogative aspect. This suggests that, while *protensio* is an attempt to catch the sense of *protasis* by mirroring its etymology, *rogamentum* was an Apuleian attempt to go directly for the sense (again with an eye on the *Topics* account) as a thing asked or proposed for agreement. If this is so, then we can understand why *rogamentum* also fell from favour. It must have seemed to put the emphasis so blatantly on the interrogative aspect that it could not sit very happily with the statemental core concept introduced a few lines

earlier in P.H.I, and which is said to be either true of false. What we suggest is, in short, that *protensio* and *rogamentum* were two attempts to do almost exactly the same thing, and that they failed for much the same reasons.

This would have left Apuleius with the problem of finding a word which was consistent with the proposition having the functional role of a premiss, which it acquires in the disputatious situation by agreement of one's interlocutor, and with its being true or false, which depends on no such agreement. He needed a word which was sufficiently neutral or ambiguous to encompass both the statemental and interrogative aspects of the *protasis*, and also preferably able to encompass both the special functional role of a premiss and the general statemental role. He found what he wanted in the term *propositio*.

First, its etymology was almost ideal, since it is derived from the verb *proponere* which includes among its senses both "to propose" and "to declare". We should bear in mind here that, even though we know very well that etymology is a treacherous basis on which to make semantic points, there was a long Roman tradition of doing just that. Given that, it is quite likely that Apuleius would have thought that the etymology of *propositio* made it just sufficiently ambiguous to catch not only his statemental core-notion but the interrogative aspect of the *protasis* as well. If he did, then the apparently drastic shift from the *propositio* of P.H.I to the interrogative *propositio* of P.H.VII becomes intelligible. The *propositio* of P.H.VII is a proposal, and, if the interlocutor assents or agrees to it, "the question has been removed" and it can function as a premiss—in Apuleian terms, an acceptance [*acceptio*]. So the *propositio* can have the special functional role of a premiss, subject to its being agreed to, as well as the general statemental role, which includes its being true or false.

Now, in P.H.VII, Apuleius remarks that what he calls an acceptance is just what is commonly called a *propositio*—which brings us to the second reason why this word served his purposes so well. The word already had a long and not unsuitable history as a technical term both in rhetoric and in logic. In rhetoric, the *propositio* was a brief statement of what we want to establish.[2] In logic, Cicero used the term to refer to the major premiss of a syllogism (the minor being the *assumptio*).[3] That the Ciceronian type of use persisted to Apuleius's own time is indicated by two passages in Aulus Gellius,[4] very parallel in content, in one of which a proposition functioning as a premiss is referred to as a *propositio*, and in the other as

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[2] An example of this use is to be found in the *Rhetorica ad Herennium* (once attributed to Cicero) at II.xviii.28.

[3] For example, Cicero, *op. cit* I. xxxvii. 67 and I. xxxiv. 59.

[4] Aulus Gellius, *Noctes Atticae* II. vii. 21 and V. xi. 8.

a *protasis*. It is interesting to note that the inferences in question are not assertoric syllogisms, and that the proposition referred to is in each case a disjunctive proposition. It is therefore possible that by Gellius's time a *propositio* is any premiss, and is not restricted to being the major premiss in a syllogism. That it still referred to a proposition *qua* premiss, and not just to a proposition *qua* statement, is shown by the fact that, when Gellius wants to say what kind of proposition it is, he does not use *propositio* but *proloquium diiunctivum*. So it is indeed likely that what Apuleius called an acceptance (i.e., a conceded *propositio* in the P.H.VII sense) was commonly called a *propositio*. So the word *propositio* was ready to hand and ripe for Apuleius to shift its meaning just enough to allow it to take on the general statemental role as well as the limited one of a premiss.

The other group of terms we shall discuss consists of the words used to label relations, mapped in the Square of Opposition, between the four kinds of predicative propositions, i.e., to say how given pairs of propositions stand to one another. These terms, which are all introduced in P.H.V, are "inconsistents" [*incongruae*], "alternates" [*alterutrae*] and "nearly-equals" [*subpares*]. None of them has persisted into more modern terminologies, in which the Anglicised terms, "contraries", "contradictories" and "subcontraries", are derived from the later Latin terms, *contrariae*, *contradictoriae* and *subcontrariae*.

When Aristotle introduces these relations of opposition, his eye is set very firmly on the propositions as utterances in a rather concretely conceived context of dialogue. So when he discusses contrariety and contradictoriness of propositions in *De Interpretatione* 17a-18a, his principal focus is on the opposed propositions as an affirmation/denial pair—i.e., as a pair of propositions such that someone who asserted one would be denying what someone who asserted the other would be affirming. As a result, his principal question about the nature of any relation of opposition is about how one is a denial of the other. With a good deal of logical hindsight to guide us, we can see quite easily the connection between this dialectical view of opposition and its statement at a more abstracted level as a relation expressed in terms of the opposed propositions being true or false. Aristotle does not really see this connection clearly, although he throws in rather incidentally such remarks as that a pair of contraries cannot both be true. In the Apuleian account, however, it is the truth-relations that form the central features of opposition, and he is able to mark the differences between the different kinds of opposition very neatly at this more abstracted level. Nevertheless, he *identifies* the inconsistents, the nearly-equals and the alternates in a thoroughly Aristotelian way in terms of quantity and quality, and at various points he falls back on more dialectically toned turns of phrase. But this basic fidelity to Aristotle can-

not obscure the fact that his conceptual focus is the truth-relational one; and this emerges clearly if one examines his choice of terms *incongruae* [our "inconsistents"] and *alterutrae* [our "alternates"] for contraries and contradictories.

In the case of *incongruae*, it appears that Apuleius wanted a word which would carry the idea of propositions not in harmony or agreement, in the sense of not being suitable to be asserted together because they cannot both be true. The word *incongruae* does not exclude the idea that both propositions might be false, so that both can be denied, and the contrary/contradictory distinction is thereby preserved. It seems likely that he felt that the word *contrariae* (which later came to be the standard term for contraries) would carry a merely generic force of oppositeness—and in fact he uses the word in just that sense in introducing the *alterutrae*, when he remarks that they are "opposite" in both quantity and quality. By opting for *incongruae* he is able to catch the specific kind of opposition which falls short of contradictoriness.

The case is even more transparent in his selection of the term *alterutrae* for a pair of contradictories. This is a perfectly normal Latin word, which already had the sense of "one or the other (of two)". Apuleius's focus is clearly on the fact that one or the other of such a pair of propositions is true and *alterutra* is false; i.e., that one and only one of the opposed propositions is true. There could hardly be a clearer case of the reflection of a truth-relational approach to logic in the terminology chosen.

It is hardly surprising that such a shift of focus, from the dialectical to the truth-relational, should have occurred in the several centuries since Aristotle, if only because it makes for a much neater exposition. Beside Apuleius, in this area at least, Aristotle tends to appear primitive and clumsy. The truth-relational focus is also more sophisticated to the extent that it goes with a more abstract conception of logic, since the basic items, propositions, are liberated from the functional limitations imposed by placing them solely in the context of disputatious dialogue. (We do not, of course, claim either that this more abstract conception of logic is not found at all in Aristotle, or that it is the only strand in Apuleius. It is purely a question of the relative dominance of the two conceptions.)

Although we have claimed that the more sophisticated conception is the dominant one in Apuleius, we have also remarked often enough on his fairly constant aim of a basic conceptual fidelity to Aristotle. It is to that which we must turn to find a plausible explanation of Apuleius's adoption of the term *subpares* ["nearly-equals"] for the particulars of opposite quality. At first sight it is very difficult to see in what sense *Some pleasure is good* and *Some pleasure is not good* are "nearly equal". We suggest that a clue to seeing why Apuleius should say this is to be found in Aristo-

tle's remarks that the opposition "between particular affirmative and particular negative is only verbally an opposition".[5] That is, Aristotle says that the relation between the two particulars of opposite quality is not a *genuine* opposition relation; and that is what Apuleius seems to be mirroring in his choice of the term *subpares*. But, despite the 'nothing to choose' flavour of "nearly-equals", Apuleius sees that there is an important relation between the *subpares* which he can state in his favoured truth-relational way: they are never false at the same time although they may be true together.

To conclude these remarks about the terms which cluster around the Square of Opposition, we note that it is a little surprising that Apuleius gives no technical term at all for the subaltern relation, which holds between each universal proposition and the particular of the same quality. Yet he states the logical facts about subalternation quite clearly, even though he does so not in terms of truth-relations but in terms of confirmation and refutation.

"Mood" and other puzzles

Although "mood" [*modus*, occasionally *modulus*] is an important term in his logic, Apuleius never defines it or offers any other explicit clarification of its meaning. We assume that this was simply an oversight, since there is no reason to suppose that he thought that this use of *modus* would be too familiar to his readers to need explanation. In any case, it is possible to work out exactly what the term means in the *Peri Hermeneias* by attending to its uses in P.H.VII *et seq.*. But in doing so, we meet other problems about the terms "directly" [*directim*] and "conversely" [*reflexim*], which he does define.

The term *modus* occurs first in P.H.VII, a little before the definition of "collection" (as do *directim* and *reflexim*). Referring to the pair of acceptances *Every honourable thing is good* and *Every good thing is useful*, Apuleius says:

> From this conjugation, as we shall show presently, comes the conclusion of the first mood [*primi modi*]—a universal, if it comes directly [*directim*]: *Therefore every honourable thing is useful*; but, if conversely [*reflexim*], a particular: *Therefore some useful thing is honourable.*

A contrast between a mood and a conjugation is clear enough here. A mood has a conclusion, and that conclusion comes from a conjugation.

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[5] Aristotle, *Prior Analytics* II, 15. The key word is "only", since Aristotle here says that there are four kinds of verbal opposition—i.e., opposition apparently expressed in the words used to state the propositions or to describe them ("affirmative", "negative").

And as soon as the first mood of the first formula is set out at the beginning of P.H.IX it is quite apparent that a mood is to be taken as embracing both the conjugation and the conclusion which the conjugation brings together. That is, a mood is a valid assertoric syllogistic collection. What is not clear from the passage quoted above from P.H.VII is whether different conclusions brought together by the same conjugation produce different moods. But P.H.IX makes it clear that they do; for the conjugation with the universal conclusion which "comes directly" constitutes the first mood of the first formula, while the same conjugation with the particular conclusion obtained conversely constitutes the fifth mood of the first formula. Conversely, a difference in conjugation, even when the conclusion is the same, produces a different mood; for the seventh mood of the first formula has the same conclusion as the fifth, but a different conjugation. To sum up, a mood is a valid form of the assertoric syllogism, whose identity depends on both the conjugation and the conclusion. This is the sense in which "mood" is used most commonly in the *Peri Hermeneias*. However, the reference in P.H.VII to "the moods of the Stoics" [*moduli Stoicorum*] may suggest that Apuleius had a more general concept of a mood, of which the syllogistic mood is a special case.

As Apuleius states in P.H.VIII, in the first formula there are nine moods and six conjugations. That is, there are six conjugations, with the common particle occurring as declarative in the first proposition and as subjective in the second, from which some further predicative proposition can be inferred validly. The fact that there are nine moods comes from the fact that in six cases the conclusion is inferred "directly" and in three it is inferred "conversely". There is some confusion in Apuleius about this pair of terms, and it is to that point that we now turn.

The terms "directly" [*directim*] and "conversely" [*reflexim*] are defined in P.H.VII. A conclusion is said to be inferred directly from a conjugation if the subjective and declarative in the conclusion occur as subjective and declarative, respectively, in the propositions in the conjugations (i.e., in the premisses from which they are drawn). It is said to be inferred conversely if the subjective and declarative in the conclusion occur as declarative and subjective, respectively, in the premisses from which they are drawn. In the light of this definition, it is clear that, if a convertible proposition can be inferred directly from a conjugation, another conclusion can be inferred conversely from the same conjugation. But this condition is not a necessary one, as can be seen from the eighth and ninth moods of the first formula; for those moods have a particular abdicative conclusion inferred conversely, and a particular abdicative is not the converse of any proposition. We may assume that it was this fact which forced Apuleius to attempt a definition of "con-

versely" which is independent of the convertibility of a proposition, and so to proceed in a more structural fashion.

However, the structural definition offered in P.H.VII is defective. Although it fits the moods of the first formula, it would have the consequence that no mood could be inferred, either directly *or* conversely in the second and third formulas. This follows from the fact that in those formulas the particles to be brought together in the conclusion must occur either both as subjectives in the conjugation or both as declaratives. The definition's defect is, therefore, not merely that it would make it impossible for conclusions to be inferred *conversely* in the second and third formulas, as has been suggested by Thom,[6] but that it would eliminate all moods in those formulas. Sullivan[7] suggests that Apuleius should have defined "directly" by saying that a conclusion is inferred directly if *either* its subjective *or* its declarative occurs as subjective or declarative (respectively) in its premiss, or if both conditions hold. But that would be courting disaster. If Apuleius had done as Sullivan suggests, then it would make it a necessary condition for a conclusion's being inferred *conversely* that its subjective should not be subjective in its premiss *and* that its declarative should not be declarative in its premiss. It would follow that there could be no converse moods in the second or third formulas, in which the particles collected in the conclusion must either both appear as subjectives or both as declaratives in the conjugation. That would not matter if there were no converse moods in those formulas, but Apuleius makes explicit mention of a third formula conjugation from which a conclusion can be inferred conversely; and, as we shall detail in the next chapter, he misses some converse moods in each of the second and third formulas.

Apuleius has certainly made a mistake in defining "directly" and "conversely", and Sullivan's amendment will not work either. There is, however, a relatively simple solution to the problem of seeing what Apuleius should have done. If one runs over the exposition of the moods in the various formulas, one finds that in every case in which Apuleius says that a conclusion is inferred directly, its subjective is drawn from the first-stated premiss and its declarative is drawn from the second. Whenever he says that a conclusion is inferred conversely, the situation is reversed. This simple structural feature catches his working concepts of direct and converse inference; it is, therefore, what he should have enshrined in his definitions, without any complications involving the

[6] Paul Thom, *The Syllogism*, Munich 1981, p.262, n.6 to section 3.

[7] Mark W. Sullivan, *Apuleian Logic—the nature, sources and influence of Apuleius's Peri Hermeneias*, Amsterdam 1967, p. 103.

roles of the particles in the propositions in the conjugation. In view of the structure of an assertoric syllogism, he could have defined the two terms very simply, by saying that a conclusion is inferred directly if its subjective is drawn from the first premiss, and that it is inferred conversely if its subjective is drawn from the second premiss.

We can catch at least a glimpse of what may have led Apuleius astray here if we note that in the first formula, but only in the first, the simple definitions just suggested are equivalent to the definitions of "directly" and "conversely" in P.H.VII. His gaze appears to have been fixed too firmly on the first formula for him to see that *how* the subjective and declarative of the conclusion appear in the premisses is irrelevant. Equally, his dalliance with the notion that order of statement of the propositions in a conjugation is irrelevant to the identity of the conjugation may have clouded his vision on this matter too, by making him reluctant to speak of the first and second propositions in a conjugation. There is, of course, something appealing about the idea that order is irrelevant, viz., that if a certain conclusion follows from given premisses, then it will still follow if the order of the premisses is changed. But, as we saw in the last chapter, order-irrelevance does not sit very happily with what appears to be his working concept of a conjugation-in-a-formula. His dalliance with it was unfortunate, and it is doubly unfortunate if it prevented him from defining "directly" and "conversely" in a satisfactory way.

The defects of the Apuleian definitions of "directly" and "conversely" may well be reflected in the different treatments of the converse moods in the three formulas. In the first formula, Apuleius is careful to list all the moods in which the conclusion is inferred conversely, along with those in which it is inferred directly. Furthermore, he distinguishes (albeit in a convoluted fashion) those converse moods which have a matching direct mood with a convertible conclusion from those (viz., his eighth and ninth moods) for which that is not the case. But in discussing the moods of the second and third formulas, he appears quite careless. He incorrectly halves the number of moods in the second formula by missing two converse moods of each of the kinds he had distinguished in the first formula. In the third formula, he misses two moods which can be obtained by converting the conclusion of a direct mood, and mentions another of the same kind in a rather dismissive way, with an unkind cut at Theophrastus on the side; and it is arguable that he misses three others whose conclusions are not the converses of those of direct moods. We shall explore these matters more fully in the next chapter. They are mentioned here only because it seems possible that the omissions are due in part to confusion consequent on his having defined "directly" and "conversely" in a way which fits only the first formula.

CHAPTER SIX

OUTLINE OF THE LOGICAL SYSTEM

We have already explained some of the technical terminology of the *Peri Hermeneias* and discussed some of the fundamental logical concepts used in it. The principal aim of that treatment was to provide one type of aid to understanding the text. In this chapter, our aim is to provide a different aid to it by sketching the bare bones of the system of syllogistic logic presented in the *Peri Hermeneias*. Many of the terms and concepts already treated will reappear here, but now set explicitly in the context of the system as a whole. On the whole, we shall lay the stress on concise description, with a minimum of interpretative comment, but with enough references to make it possible to relate the elements described to the relevant parts of the text.

Notational conventions

For the sake of concise exposition, we shall use some standard abbreviating notation in this sketch. The letters "S", "D" and "M" will be used to represent subjective and declarative particles. As he shows in P.H.XIII, Apuleius was familiar with this Peripatetic use of letters as variables over, or dummies for, the particles. We shall add to this the later practice of using the lower case letters "a", "e", "i" and "o" to represent the four ways of combining subjective and declarative particles to form predicative propositions, as tabulated below. In dealing with single predicative propositions, we shall use "S" to represent the subjective and "D" to represent the declarative. We can then tabulate the four forms of the predicative proposition thus:

Universal dedicative	Every S is D	S	a	D
Universal abdicative	No S is D	S	e	D
Particular dedicative	Some S is D	S	i	D
Particular abdicative	Some S is not D	S	o	D

The classification of predicative propositions into the four forms above occurs in P.H.III. In Apuleius's natural language examples, the subjectives and declaratives—"breathing thing", "lives", "honourable (thing)", and so on—are intended as *representative* subjectives and declaratives, and are therefore stand-ins for any such particles in just the way that our capital letters are.

In dealing with syllogistic moods, we shall regularly use "S" to represent the particle, whether subjective or declarative, drawn into the conclusion from the first-stated premiss; and "D" to represent the particle, whether subjective or declarative, drawn into the conclusion from the second-stated premiss. "M" will be reserved for the particle which is common to the premisses and does not appear in the conclusion. The conclusion will be separated from the premisses by a horizontal line (which can also be taken to represent the "therefore" [*igitur*] of the Apuleian examples). So we shall set out the first mood in the first formula [P.H.IX] as follows:

S a M
M a D
———
S a D

When appropriate, we shall use the standard device of letting the capitals, "A", "E", "I" and "O", represent the types of propositions formed by their lower case counterparts. Under this convention, an A proposition is a universal dedicative, and so on.

The Square of Opposition

In P.H.V, Apuleius treats some of the relations between the four kinds of predicative propositions, and in doing so gives the earliest extant directions for constructing the heuristic diagram which came to be known as the 'Square of Opposition'. We shall discuss these directions and the form of Apuleius's diagram in Appendix B; here we shall merely summarise the relations which are mapped by that diagram.

The two universals, S a D and S e D, are "inconsistents" [*incongruae*], and are never true together, although they may be false together. To assert one is to deny the other, although to deny one is not necessarily to assert the other.

The two particulars, S i D and S o D, are "nearly-equals" [*subpares*], and are never both false, although both may be true at the same time. To deny one is to assert the other, but to assert one is not necessarily to deny the other.

Each pair consisting of a universal and the particular of opposite quality (i.e., the pairs S a D and S o D; S e D and S i D) is a pair of "alternates" [*alterutrae*]. In each pair of alternates, exactly one of the propositions is true at any time. So to assert one of the pair is to deny the other, and *vice versa*.

All the relations just mentioned are represented in the instructions for constructing the diagram. In addition, Apuleius noted that if a universal

proposition is true, then so is the particular of the same quality; and if the particular is false, so is its universal; and that the converses of these implications do not hold. (He gave no special name to the relation between a universal and particular of the same quality.)

Apuleius notes further that, in view of the facts summarised above, there are three ways in which a universal proposition can be falsified—by establishing its inconsistent or its alternate, and by showing that its particular is false. But there is only one such way in which it can be established—by showing that its alternate is false. Similarly, a particular proposition can be established in three ways, but falsified in only one way—viz., by showing that its alternate is true.

Conversion

Apuleius says that a proposition is *convertible* if its subjective and declarative particles can always be interchanged "while the condition of truth or falsity remains the same" [P.H.VI].

So the E and the I propositions can be converted, the converse of S e D being D e S, and that of S i D being D i S. In each of these cases, the relation between the proposition and its converse is one of mutual implication. Neither the A proposition nor the O proposition is convertible in this sense, for although, on occasion, interchange of their subjective and declarative particles will preserve truth or falsity, this cannot be relied on. So Apuleius says, "For this reason ... they are not said to be convertible; for what somewhere is [proved to be] uncertain, is certainly rejected".

In any proposition, the declarative is said to be of one of five kinds (in relation to the subjective): it indicates a property, in the sense of an Aristotelian "proper accident"; or a genus; or a difference; or a definition; or an accident. A proposition is said to be convertible if and only if subjective and declarative can be interchanged, with preservation of truth or falsity, independently of what kind the declarative is. Such interchange is possible, in the cases of the A and O propositions, only if the declarative indicates a property or a definition.

However, S a D can be converted "particularly" to D i S, since S a D implies, but is not implied by, D i S. Apuleius says that this "is really a type of simple conversion, which is called conversion by inference of a conclusion". But the point of that remark seems to be mainly to contrast it with "another conversion", which involves the negation of the subjective and declarative. Even the A and O propositions admit of this type of conversion, which is really a form of what came to be known later as contraposition. S a D 'converts' in this fashion to non-D a non-S, and S o D to non-D i S.

The Formulas

In order to form a conjugation, a pair of propositions must contain a common particle. The possible positions of the common particle (as subjective in one and declarative in the other, as subjective in both, and as declarative in both) determine the three basic shapes or *formulas* (cf. Aristotle's "figures") of assertoric syllogisms. This is set out in P.H.VII. Although Apuleius distinguishes the formulas on straightforwardly structural grounds, he does not separate the two cases contained in the first possibility. (We have already remarked on this in Chapter 4.)

The general shapes of the three formulas are:

I	II	III
S — M	S — M	M — S
M — D	D — M	M — D
———	———	———

A conclusion is inferred directly from a conjugation in any formula if that conclusion is of the form S — D, and to be inferred conversely (or indirectly) if it is of the form D — S. This is not how Apuleius *defines* "directly" and "conversely", but it is a proper representation of his practice, as we argued in Chapter 5. A syllogistic mood may be said to be direct or converse if its conclusion is inferred directly or conversely.

Apuleius orders the formulas of the basis of the "worth of their conclusions". In the first formula we can infer conclusions of all types—A, E, I and O; but in the second formula we have only abdicative conclusions, although both universal and particular; and in the third formula we have only particular conclusions.

The Moods

The general form of the system of syllogistic moods in the *Peri Hermeneias* is that of an axiomatic sytem. The first four moods of the first formula, which in P.H.IX are called "indemonstrables" [*indemonstrabiles*], play the part of axioms from which the other moods are proved. The methods of proof employed for direct moods are direct reduction to an indemonstrable and proof *per impossibile* (indirect reduction), as described in our sketch of Aristotle's logic. We indicated there that Apuleius has a clearer grasp than Aristotle of the role of the underlying propositional logic, particularly in proof *per impossibile*. He also shows, in his remarks at the end of P.H.IX, that he has a clear understanding of the axiomatic role of the indemonstrables, even though he may be, to the modern eye, somewhat obsessed by their self-evident character. In the *Peri Hermeneias*, the methods of proof of each mood are indicated quite briefly, much in

the manner of Aristotle in the *Prior Analytics*. In some cases, Apuleius indicates that converse moods are to be proved by conversion of the conclusion of a direct mood, but this method is not available when the conclusion of a converse mood is an O proposition. He sometimes seems to have felt the difficulty of this position, and, in effect, gives no proof at all.

We now set out the (valid) moods in each formula, following Apuleius's numbering of the moods. Each mood will be given a number consisting of a Roman numeral for the formula and an Arabic numeral for the mood within the formula; so "II.3" denotes the third mood of the second formula. The Apuleian indication of a method of proof is given in brief annotations to the moods. Our list will include converse moods omitted by Apuleius, which will be distinguished by an asterisk preceding their number.

The First Formula [P.H.IX]

I.1	S a M M a D ——— S a D	First indemonstrable.
I.2	S a M M e D ——— S e D	Second indemonstrable.
I.3	S i M M a D ——— S i D	Third indemonstrable.
I.4	S i M M e D ——— S o D	Fourth indemonstrable.
I.5	S a M M a D ——— D i S	Convert conclusion of I.1.
I.6	S a M M e D ——— D e S	Convert conclusion of I.2.

I.7	S	i	M	
	M	a	D	Convert conclusion of I.3.
	D	i	S	

I.8	S	e	M	
	M	a	D	
	D	o	S	

I.9	S	e	M	
	M	i	D	
	D	o	S	

Apuleius gives a rather complicated account of the way in which the conjugations of I.8 and I.9 are related to that of I.4; and says that each brings together its conclusion "through conversion of the conjugation". What he presumably has in mind here is that each can be proved by use of a principle to the effect that 'If the conjugation of I.8 (I.9) implies the conjugation of I.4, then the former conjugation implies the conclusion derived by I.4'. This is, of course, just a special case of the principle underlying all direct reductions. The difference in practice in these cases is that one needs to convert both the premisses of I.8 (or I.9) *and* change their order of statement. That will give one a conjugation with the same form as that of I.4, but with 'S' and 'D' interchanged. The conclusion will then be D o S, and the mood will be a converse one. Apuleius's phrasing of the point is so odd in the case of I.8 that he almost obscures it.

Before leaving the first formula, we should note the absence of the so-called subaltern moods from the list. They are moods which have the same conjugations as I.1, I.2 and I.6, respectively, but in which the conclusions are the particulars implied by the universal conclusions of those three moods—i.e., S i D, S o D and D o S. Their omission is explained by a remark at the end of P.H.XIII, in which Apuleius dismisses all such moods, saying that it is extremely unsuitable [*perquam ineptum*] "to conclude less when more has been conceded to one".

The Second Formula [P.H.X]

II.1	S	a	M	
	D	e	M	Reduce to I.2 by converting
	S	e	D	second premiss.

II.2	S	e	M	No proof is given, except the
	D	a	M	remark that II.2 does not
	S	e	D	differ in conjugation from II.1.

We have already seen, in Chapter 4, that Apuleius is not entirely clear about the relevance of order of statement of the propositions to the identity of the conjugation. In one sense, it is quite clear that II.1 and II.2 have different conjugations; but it is equally clear that if a certain conclusion follows from premisses P1 and P2, then it follows from P2 and P1. Apuleius should have relied on the latter fact, rather than on identity of conjugation. II.2 can be proved from I.2 by interchanging the premisses and converting S e M. By I.2, the resulting premisses give the conclusion D e S, which can be converted to the required S e D.

II.3	S	i	M	
	D	e	M	Reduce to I.4 by converting
	S	o	D	second premiss.

II.4	S	o	M	
	D	a	M	
	S	o	D	Proof *per impossibile.*

*II.5	S	a	M	*II.6	S	e	M
	D	e	M		D	a	M
	D	e	S		D	e	S

*II.5 and *II.6 are converse moods obtainable by converting the conclusions of II.1 and II.2, respectively. However, the following converse moods, also omitted by Apuleius, are not of that kind.

*II.7	S	e	M	*II.8	S	a	M
	D	i	M		D	o	M
	D	o	S		D	o	S

*II.7 is proved by interchanging the premisses and converting S e M. The conclusion, D o S, then follows by I.4. However, II.8, like II.4, must be proved *per impossibile.*

The Third Formula [P.H.XI]

III.1	M	a	S	
	M	a	D	Reduce to I.3 by converting
	S	i	D	second premiss.

III.1a	M	a	S	Converse mood said by
	M	a	D	Apuleius to be not really
	D	i	S	separate from III.1.

III.2	M i S M a D ——— S i D	Reduce to I.3 by converting first premiss.
III.3	M a S M i D ——— S i D	Prove by interchanging premisses, converting M i D. Then convert conclusion obtained by I.3.
III.4	M a S M e D ——— S o D	Reduce to I.4 by converting first premiss.
III.5	M i S M e D ——— S o D	Reduce to I.4 by converting first premiss.
III.6	M a S M o D ——— S o D	Proof *per impossibile*.

*III.7	M i S M a D ——— D i S	*III.8	M a S M i D D i S

*III.7 and *III.8 are converse moods obtained by converting the conclusions of III.2 and III.3, respectively. Apuleius also omits three further converse moods of the other type.

*III.9	M e S M a D ——— D o S	*III.10	M e S M i D ——— D o S
*III.11	M o S M a D ——— D o S		

Whereas the conjugation of III.4 consists of a universal dedicative followed by a universal abdicative, that of *III.9 has the propositions reversed. *III.10 and *III.11 are similarly related to III.5 and III.6. *III.11 must be proved *per impossibile*, like III.6 and all other moods whose conjugation contains a universal dedicative and a particular abdicative (in either order). *III.9 and *III.10 are each proved from I.4. In each case one must interchange the premisses and convert the dedicative premiss. The conclusion D o S then follows by I.4.

Metatheory

As well as setting up the conceptual foundations for the logic of predicative propositions and elaborating the system just sketched, Apuleius also essays some remarks and arguments at the metatheoretic level. That is, he makes some observations *about* the logical system and its workings. These fall into two main groups. The first group, in P.H.VIII, is concerned with what types of conjugation can yield a conclusion and what type of conclusion they yield. The second group, in P.H.XIV, make up an argument designed to prove that his syllogistic system is complete in the sense that it omits no valid mood of the assertoric syllogism. The conclusion reached at the very end of the *Peri Hermeneias* is that "there are no more moods than have been mentioned before". The mode of argument is somewhat clumsy, and we know in advance that it is bound to be faulty since Apuleius had omitted several converse moods from his enumeration in P.H.IX–P.H.XI. Furthermore, we shall see that the execution of the task he set himself is blemished. However, the method he employs remains of some interest; and it appears that he could have used this method to show completeness in a stricter sense—viz., that the axiomatic basis, consisting of the four indemonstrables and the machinery for direct reduction and proof *per impossibile*, is sufficiently powerful to allow every valid mood, whether in his enumeration or not, to be proved.

In P.H.VIII, Apuleius sets out the number of moods and distinct conjugations in each formula. We have already seen in Chapter 4 that Apuleius is unclear about the criteria for distinctness of conjugations. He is, however, clear that there are forty eight possible conjugations, sixteen in each formula. It is also clear that his working notion is that of a conjugation-in-a-formula. His totals for the three formulas lead him, in P.H.VIII, to assert that there are fourteen conjugations-in-a-formula which yield a conclusion, whether directly or conversely. In fact, had he applied the principle of order-irrelevance of the proposition-types within the conjugation to the first formula, as well as to the second and third, the total would have been not fourteen, but twelve. If, however, we do not apply it in any formula, then there are twenty one distinct conjugations-in-a-formula which yield a conclusion. This can be checked by running over our tabulation of the moods in the preceding section, counting in the converse moods omitted by Apuleius.

Similarly, the total of the moods in each formula given by Apuleius in P.H.VIII is nineteen, since he does not recognise III.1a as a separate mood. However, he is in error on that point since III.1a is a converse mood which merely has the same conjugation as the direct mood III.1.

If we include III.1a and the converse moods omitted altogether by Apuleius, the correct total is twenty nine. At least, that is the correct total if we join Apuleius in rejecting the subaltern moods, in which a particular is inferred in place of a universal conclusion. If we were to accept the subaltern moods as well, we would add three in the first formula (from I.1, I.2 and I.6) and four in the second (from II.1, II.2, *II.5 and *II.6), making a grand total of thirty six. It appears that "Aristo the Alexandrian and some younger Peripatetics" [P.H.XIII] erred not only by their "extremely unsuitable" acceptance of such moods, but also by missing two subaltern moods in the second formula, presumably those from the converse moods.

In P.H.VIII, Apuleius states the following facts about various kinds of conjugation:

(a) from a conjugation consisting of two particular propositions no conclusion can be inferred
(b) from a conjugation consisting of two abdicatives no conclusion can be inferred
(c) from a conjugation containing an abdicative, only an abdicative conclusion can be inferred
(d) from a conjugation containing a particular, only a particular conclusion can be inferred.

Points (a) and (b) are repeated in P.H.XIV, and form an important part of the basis for his attempt at a completeness proof.

Apuleius's general procedure in P.H.XIV is to consider the forty eight possible conjugations and then to eliminate those which cannot yield a conclusion, either generally or in a particular formula. Although he begins and ends the chapter with references to *moods*, his argument is concerned with the number of conjugations which can yield some conclusion, and he does little to link the number of moods to the number of usable conjugations. Apart from that blemish, his argument contains some mistakes of detail. We shall comment on some of these, but our main task, in line with our general practice in this chapter, is to present only a concise outline of the argument and its problems.

Apuleius first attempts to eliminate those conjugations which fail to yield a conclusion in every formula. Having said that there are sixteen conjugations in a each formula, he goes on:

> Of these, six are equally invalid in all [formulas]—two, when either of the abdicatives precedes the other, and four, when one particular precedes itself or is placed under the other. For nothing can be concluded where there are two particulars or two abdicatives. So ten conjugations remain in each formula. [P.H.XIV]

The first and third sentences of this passage are in agreement; but the second which appears to be inserted to justify the first, correctly licenses the elimination of a further conjugation, so that only nine will remain in each formula. The elimination of conjugations consisting of two abdicatives covers two *like* abdicatives as well as the cases of two unlike abdicatives covered in the first sentence. A conjugation consisting of two O propositions is covered by "when one particular precedes itself", in the first sentence, and by "two particulars" in the second. However, a conjugation of two E propositions is not eliminated by the first sentence, although it is by the "two abdicatives" in the second. Apuleius overlooks the fact that his second sentence has done this, and proceeds thereafter to eliminate such conjugations in each formula separately. This is of course consistent with his claim that "ten conjugations remain in each formula".

The Apuleian argument then proceeds by further eliminations in the separate formulas. He gives no argument to support most of the eliminations, and the structure of the argument is clumsy. Furthermore, he constantly errs on the side of over-elimination, often overlooking conjugations from which a conclusion can be inferred conversely. In that respect, many of the mistakes mirror his omissions in expounding the moods of each formula.

For the sake of brevity, we shall adopt a conventional shorthand for referring to conjugations, using a pair of capital letters for a conjugation consisting of a pair of propositions of those types—so, for example, "AO" is a label for a conjugation consisting of a universal dedicative followed by a particular abdicative. The following is a sketch of the Apuleian argument.

(1) After the general elimination, there remain 30 conjugations, 10 in each formula. I.e., 48—(6 × 3) = 30.
(2) AO and AI give no conclusion in formulas I and II. So 30—4 = 26.
(3) EE and OA give no conclusion in Formulas I and III. So 26—4 = 22.
(4) Of the 22 conjugations remaining, 6 belong to formula I (viz., the six treated in P.H.IX), and 8 belong to each of formulas II and III.
(5) EI gives no conclusion in formulas II and III. So 22—2 = 20.
(6) AA, AI, IA and OA give no conclusion in formula II. So 20—4 = 16.
(7) EA and OA give no conclusion in formula III. So 16—2 = 14.
(8) This leaves 3 conjugations remaining in formula II (viz., the

> three treated in P.H.X), and 5 in formula III (viz., the five treated in P.H.XI), all of which have been shown to yield conclusions, along with the 6 in formula I. The total number of conjugations which yield conclusions is therefore 6 + 3 + 5, i.e., 14.

Although the basic eliminative strategy is sound enough, at least as a way of determining the total number of conjugations which will yield a conclusion, the actual argument is punctuated with mistakes. AI in formula II is eliminated twice, in steps 2 and 6; EE in formula II is not eliminated at all; OA in formula II is eliminated despite the mood II.4. We can see a reflection of Apuleius's omission of converse moods in the second and third formulas in the fact that here he does not see that no less than six of his eliminations are blocked by the existence of *II.7, *II.8, *III.9, *III.10 and *III.11, the last of which blocks the double elimination of OA in formula III in steps 3 and 7. These mistakes are of a more or less mechanical nature, but there are also further signs of the fairly radical unclarity about the criteria for identity of a conjugation on which we have remarked so often. This shows itself in connection with the conjugations of formula II. In P.H.X, the conjugations AE and EA, of II.1 and II.2, are said to be the same, and this is necessary for Apuleius to put the number of conjugations in this formula at three. But, in the same formula, the conjugation of II.3, viz., IE, is allowed, while EI is eliminated in step 5. This could, of course, be in part a consequence of the omission of *II.7, which has that conjugation; but the contrasting treatment of the two cases in formula II reinforces the opinion that "conjugation" is the term about which Apuleius is at his most confused. It also prompts the question of the extent to which this confusion underlies the other mistakes we have noted.

APPENDIX A

AN APULEIAN GLOSSARY

The primary purpose of this glossary is to link three logical vocabularies: Apuleius's Latin terms, our translations of them, and, in suitable cases, the traditional English terms which have a reasonably close correspondence with the Apuleian terms. All items from the three vocabularies are listed in a single alphabetic sequence, with the kinds of entry word distinguished by type face, thus: **Apuleian Latin**, *our translations* and traditional terms (plain type). The 'main entry' for each set of terms will be under the Latin word, where the reference to its introduction in the *Peri Hermeneias*, Apuleius's definition or description of use of the term and any additional notes will appear. Greek words are transliterated and treated like Latin. Generally, the other entries will merely give equivalents which will lead to the main entry. This arrangement should make it possible to obtain all the relevant information contained in the glossary, no matter which logical vocabulary is used as the mode of approach.

In many cases we have adopted English derivatives of the Latin words as their translations. Even when this results in adjacent entries for a Latin term and its translation, we have included both. But, where our translation is identical with the traditional term, we have omitted an entry for the latter.

abdicativa = *abdicative* = negative

P.H.III: others [i.e., propositions] are *abdicative*, which deny something of some thing.

abdicative = **abdicativa**

absoluta sententia = *complete meaning*

P.H.I.: [A statemental utterance] expresses a *complete meaning* and .... is subject to truth or falsity.

acceptance = **acceptio**

acceptio = *acceptance* = premiss

P.H.VII: an *acceptance* is a proposition which is granted by one answering—for example, if someone were to pose the question: "Is every honourable thing good?", it is a proposition, and, if he says that he assents, it becomes an acceptance since the interrogative aspect has been removed.

NOTE: Since assent has been obtained, the *acceptance* can function as a premiss for further argument. In Apuleian practice, it is a premiss of a syllogism.

aequipollentes propositiones = *equipollent propositions* = equivalents

P.H.V: [Those propositions] are said to be *equipollent* which have just as much power in another form of words, and which become true at the same time or false at the same time, one on account of the other of course.

affirmative = *dedicative* = **dedicativa**

alternate = **alterutra**

alterutra = *alternate* = contradictory

P.H.V: Those [pairs of propositions], which are opposite to one another in both quantity and quality, may be called *alternates*, because it is indeed necessary that one or the other be true.

axioma (Greek) = **[oratio] pronuntiabilis** = statement

NOTE: **axioma** is the standard Stoic term for a proposition, in the sense in which Apuleius introduces the concept in P.H.I. (as the statemental core notion).

categorical = *predicative* = **praedicativa**

collectio = *collection* = syllogism

P.H.VII: that whole form of reasoning which consists of acceptances and a conclusion, and is called a *collection* or an inference, can most conveniently be defined thus,

following Aristotle: "A speech in which some things having been conceded, something other, beyond those which have been conceded, follows by necessity, but through those very things which have been conceded".

collection = **collectio**

common particle = **particula communis**

complete meaning = **absoluta sententia**

compound [proposition] = *substitutive* = **substitutiva**

conclusio = *inference*

NOTE: In P.H.VII, **conclusio** is introduced as a synonym of **collectio** (q.v.): "that whole form of reasoning which consists of acceptances and a conclusion, and is called a collection or an *inference* [**collectio vel conclusio**]...". Although Apuleius's standard term for a conclusion is **illatio**, he sometimes uses **conclusio** in that sense also. [See our discussion in Chapter 5.]

conclusion = **illatio**

NOTE: Also **illativum rogamentum** (q.v.). See also the note on **conclusio**, above.

conclusion = **illatio/illativum rogamentum/conclusio**

condicionalis = *conditional*

P.H.II: The other [kind of proposition] is the substitutive or *conditional*, which is ... composite.

NOTE: Synonym for **substitutiva**. It is clear from the context that these terms cover all compound propositions and not merely those of the 'If ... then ...' form.

conditional = **condicionalis**

coniugatio = *conjugation* = premisses of a syllogism

P.H.VII: A *conjugation* of propositions may be said to be their union through some common particle, by which they are joined together; for thus they are able jointly to determine one conclusion.

conjugation = **coniugatio**

contradictory = *alternate* = **alterutra**

contrary = *inconsistent* = **incongrua**

conversely = **reflexim**

NOTE: This adverb modifies the verb "to infer".

conversibilis = *convertible* = to have a simple converse

P.H.VI: The universal abdicative and its alternate, i.e., the particular dedicative, are said to be *convertible* propositions, because their subjective and declarative particles can always be interchanged while the condition of truth or falsity remains the same.

conversio = *conversion*

NOTE: Apuleius evidently thought that **conversio** was sufficiently explained by the account given of **conversibilis** (immediately after the first occurrence of **conversio** in P.H.VI).

conversion = **conversio/reflexio**

convertible = **conversibilis**

declarativa = *declarative* = predicate

P.H.IV: the other [part of speech] is called *declarative*, e.g., "argues", "does not argue", for it declares what Apuleius does.

declarative = **declarativa** [= predicate]

declarative = *statemental* = **pronuntiabilis**

dedicativa = *dedicative* = affirmative

P.H.III: there are [differences] of quality, because some are *dedicative*, which affirm something of some thing, e.g., "Virtue is a good", for it affirms that goodness is part of virtue;

dedicative = **dedicativa**

directim [inferre] = *[to infer] directly*

P.H.VII: I say that something is inferred *directly* when the same particle is subjective just as much in the conjugation as in the conclusion itself, and, when this holds for both parts, the declarative is likewise the same.

NOTE: The defective nature of this definition is discussed in Chapter 5, under *"Mood" and other puzzles.*
directly = **directim**
NOTE: This adverb modifies the verb "to infer".
effatum = **[oratio] pronuntiabilis** = statement
NOTE: In P.H.I, **effatum** is attributed to Sergius, a Stoic philosopher of the 1st Century A.D., for whom it was almost certainly a Latinisation of Greek **axioma.** The term is also used in Cicero, *Academica* II.95; and it occurs, without attribution, in Seneca, *Epistulae Morales* 117.13.
enuntiatum = **[oratio] pronuntiabilis** = statement
NOTE: In P.H.I, **enuntiatum** is attributed to Cicero, who uses it several times in *De Fato* as a Latinisation of the Greek **axioma.**
equipollent propositions = **aequipollentes propositiones**
equivalents = *equipollent propositions* = **aequipollentes propositiones**
figure = *formula* = **formula**
formula = **formula**
formula = *formula* = figure [of the syllogism]
P.H.VII: ... this common particle [in the propositions in a conjugation] should be either subjective in each proposition or declarative in each, or subjective in one and declarative in the other. Therefore, there come to be three *formulas*, of which the first may be said to be that in which that common particle is subjective in one and declarative in the other.
illatio = *conclusion*
P.H.VII: Now what is collected from acceptances and inferred, I call a *conclusion* or an illative proposition.
NOTE: Although **illatio** is used consistently in this sense after the above definition, in P.H.VI it interchanges with **conclusio—quae in conclusionum illationibus reflexio nominatur** = *which is called conversion by inference* [**illationibus**] *of a conclusion* [**conclusionum**].
illative proposition = **illativum rogamentum**
illativum rogamentum = *illative proposition* = conclusion
NOTE: Synonym for **illatio** (q.v.), introduced in the definition of the latter in P.H.VII, but not used thereafter, although **illativum** alone occurs in P.H.VII.
incongrua = *inconsistent* = contrary
P.H.V: These [dedicative and abdicative universals] may be said to be *inconsistent* with one another.
inconsistent = **incongrua**
indefinita = *indefinite*
P.H.III: [other propositions] are *indefinite*, e.g., "An animal breathes"—for this does not determine whether every or some [animal breathes].
indefinite = **indefinita**
indemonstrabiles = *indemonstrables* = perfect syllogisms
P.H.IX: of these nine moods in the first formula the first four are called *indemonstrables*, not because they cannot be proved, ... or because they may not be proved, ... but because they are so simple and evident that they do not need proof.
indemonstrables = **indemonstrabiles**
indirect reduction (see **per impossibile**)
inference = **conclusio**
NOTE: In general, we translate **collectio**, the definitional synonym of **conclusio** as *collection*. In P.H.VI, **illatio** (q.v.) is used to mean "inference".
middle term = *common particle* = **particula communis**
modus = *mood* [of the syllogism]
NOTE: **modus** appears first in P.H.VII, but no definition or explanation of its use is given.
mood = **modus**
nearly-equal = **subpar**

negative = *abdicative* = **abdicativa**
particula = *particle*
NOTE: Although **particula** occurs first in P.H.III, where it is used to refer to a negative particle, such as "not", it is most frequently used by Apuleius to refer to the **subjectiva** and **declarativa** (q.v.) of a proposition.
particula communis = *common particle* = middle term
P.H.VII: A conjugation of propositions may be said to be their union through some *common particle*, by which they are joined together; for thus they are able jointly to determine one conclusion.
particular = **particularis**
particularis = *particular*
P.H.III: [other propositions] are *particular*, e.g., "Some animals do not breathe".
per impossibile = *per impossibile* = reductio ad absurdum
P.H.XII: Common to all [moods], even to the indemonstrables, is another proof which is said to be *per impossibile* and called by the Stoics *prima constitutio* or *primum expositum*. They define it in this way: If a third [proposition] is collected from two, either of them together with the opposite of the conclusion collects the opposite of the remaining one. But the ancients defined it in this way: For every inference, if its conclusion were destroyed and either premiss assumed, then the remaining one is destroyed. This was invented against those who, having conceded the acceptances, impudently deny what is collected from them. For through this they are driven to impossibilities, provided that from what they deny something will be found opposed to what they had conceded before. Moreover it is impossible that opposites are true at the same time. So by that impossibility they are forced to [accept] the conclusion.
NOTE: Although this elaborate account is not given until P.H.XII, the term had already been used by Apuleius when stating that certain moods can be reduced to the indemonstrables only indirectly, [i.e., can be proved only by *reductio ad absurdum*].
perfect syllogisms = *indemonstrables* = **indemonstrabiles**
praedicativa = *predicative* = categorical
P.H.II: One [kind of proposition] is the *predicative*, which ... is simple, as if we were to say "He who reigns is happy".
predicate = *declarative* = **declarativa**
predicative = **praedicativa**
premiss = *acceptance* = **acceptio**
NOTE: An **acceptio** is a single proposition which has conceded and so can serve as a premiss.
premisses [of a syllogism] = *conjugation* = **coniugatio**
NOTE: A **coniugatio** is a pair of premisses, linked by a **particula communis** (i.e., a "middle term").
proloquium = **[oratio] pronuntiabilis** = statement
NOTE: In P.H.I, **proloquium** is attributed to Varro, for whom it was a Latinisation of Greek **axioma**. This attribution is supported by Aulus Gellius (*Noctes Atticae* XVI.viii) and located in the now lost 24th book of *De Lingua Latina*. From the same source we learn that the term was used in the same way by Varro's teacher, L. Aelius Stilo.
pronuntiabilis = *statemental* = declarative
P.H.I: ... the most important [kind of speech] for my topic is that which is called *statemental*. It expresses a complete meaning and is the only one of all of them that is subject to truth or falsity.
proper accident = *property* = **proprium**
property = **proprium**
propositio = *proposition*
NOTE: Most of P.H.I is devoted to the introduction of **propositio** to denote a declarative speech or utterance [**oratio pronuntiabilis**]. It is thereafter Apuleius's

standard propositional term, and it is made clear in P.H.VII that it is intended specifically as a Latinisation of Greek **protasis**. Especially in later chapters of the *Peri Hermeneias*, it is used frequently to refer to a proposition functioning as a premiss—i.e., as an equivalent of **acceptio** (q.v.). We have discussed **propositio** and its introduction at a number of points, but particularly in Chapter 4 above.

proposition = **propositio**

proprium = *property* = proper accident

P.H.IV: ... for the most part the subjective is the smaller and the declarative is the greater [in extension] ...unless it happens that a *property* of something is declared of it, as if you were to say: "He who is a horse is a neigher", and it is a *property* of a horse to neigh.

protasis (Greek) = **[oratio] pronuntiabilis** = statement

NOTE: **protasis** is the standard Aristotelian term for a proposition, in the sense in which Apuleius introduces the concept in P.H.I (as the statemental core notion); but it also has an interrogative aspect, as Apuleius recognises in P.H.VII. The Apuleian **propositio** (q.v.) is a Latinisation of **protasis**.

protensio = **[oratio] pronuntiabilis** = statement

NOTE: Apuleian synonym for **propositio**, introduced in P.H.I, but not used thereafter.

qualitas = *quality* [of a proposition]

NOTE: **qualitas** is introduced in P.H.III without any more explanation than is given by the determinates, **dedicativa, abdicativa** (q.v.), of which **qualitas** is the determinable.

quality = **qualitas**

quantitas = *quantity* [of a proposition]

NOTE: **quantitas** is introduced in P.H.III without any more explanation than is given by the determinates, **universalis, particularis, indefinita** (q.v.), of which **quantitas** is the determinable.

quantity = **quantitas**

reflexim [inferre] = *[to infer] conversely*

P.H.VII: Now, I say that something is inferred directly when the same particle is subjective just as much in the conjugation as in the conclusion itself, and, when this holds for both parts, the declarative is likewise the same; when this is reversed, [it is inferred] *conversely*.

NOTE: The defective nature of this definition is discussed in Chapter 5, under *"Mood" and other puzzles*.

reflexio = *conversion*

NOTE: **reflexio** is introduced without explanation in P.H.VI. It is an Apuleian synonym for **conversio** (q.v.).

rogamentum = **[oratio] pronuntiabilis** = statement

NOTE: Apuleian synonym for **propositio**, introduced in P.H.I but hardly used thereafter—once in P.H.IV, once in P.H.VII in the phrase **illativum rogamentum**.

statement = **[oratio] pronuntiabilis** (See **pronuntiabilis**.)

NOTE: See also **axioma, effatum, enuntiatum, proloquium, propositio, protasis, protensio, rogamentum**.

statemental = **pronuntiabilis**

subcontrary = *nearly-equal* = **subpar**

subdit(iv)a = *subordinative* = subject [term]

NOTE: **subdita** appears only in P.H.IV, and is an Apuleian synonym for **subiectiva**. See Note 2 to the translation for our reading of **subdita** as **subditiva**.

subiectiva = *subjective* = subject [term]

P.H.IV: Henceforth, of the two parts [of speech] already mentioned one is called the *subjective* or the *subordinative*, e.g., "Apuleius".

subject [term] = *subjective* = **subiectiva**

subjective = **subiectiva**
subneutra = *alternate* = contradictory
NOTE: **subneutra** appears without explanation twice in P.H.V, and nowhere else. It is an Apuleian synonym for **alterutra** (q.v.).
subordinative = **subdit(iv)a**
subpar = *nearly-equal* = subcontrary
P.H.V: on the bottom line, under each of [the universals], let the particulars be written, e.g., "Some pleasure is a good", "Some pleasure is not a good". These may be said to be *nearly equal* to one another.
substitutiva = *substitutive* = compound [proposition]
P.H.II: The other [kind of proposition] is the *substitutive* or conditional, which ... is composite.
NOTE: Synonym for **condicionalis**. It is clear from the context that these terms cover all compound propositions and not merely those of the 'If ... then ...' form.
substitutive = **substitutiva**
syllogism = *collection* = **collectio**
reductio ad absurdum = *per impossibile* = **per impossibile**
universal = **universalis**
universalis = *universal*
P.H.III: ... some [propositions] are *universal*, e.g., "Every breathing thing lives".

PART II

THE PERI HERMENEIAS

Text and Translation of the *Peri Hermeneias*

ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ

LUCII APULEI MADAURENSIS

I. Studium sapientiae, quod philosophiam vocamus, plerisque videtur tres species seu partes habere: naturalem, moralem et de qua nunc dicere proposui rationalem, qua continetur ars disserendi. sed cum disseramus oratione, cuius variae species sunt, ut imperandi mandandi succensendi optandi vovendi irascendi odiendi invidendi favendi miserandi admirandi contemnendi obiurgandi paenitendi deplorandi tum voluptatem afferendi tum metum incutiendi, in quibus oratoris excellentis est lata anguste, angusta late, vulgata decenter, nova usitate, usitata nove ***, extenuare magna, maxima e minimis posse efficere aliaque id genus plurima: est una inter has ad propositum potissima, quae pronuntiabilis appellatur, absolutam sententiam comprehendens, sola ex omnibus veritati aut falsitati obnoxia, quam vocat Sergius effatum, Varro proloquium, Cicero enuntiatum, Graeci πρότασιν tum ἀξίωμα, ego verbum e verbo tum protensionem tum rogamentum; familiarius tamen dicetur propositio.

II. Propositionum igitur perinde ut ipsarum conclusionum duae species sunt, altera praedicativa, quae etiam simplex est, ut si dicamus: *Qui regnat, beatus est*, altera substitutiva vel condicionalis, quae etiam composita est, ut si aias: *Qui regnat, si sapit, beatus est*; substituis enim condicionem, qua, nisi sapiens est, non sit beatus. nos nunc de praedicativa dicemus, quia natura prior est ac velut elementum substitutivae.

III. Sunt et aliae differentiae, quantitatis ac qualitatis. quantitatis quidem, quod aliae universales sunt, ut: *Omne spirans vivit*, aliae particulares, ut: *Quaedam animalia non spirant*, aliae indefinitae, ut: *Animal spirat*; non enim definit, utrum omne an aliquod, sed tamen pro particulari semper valet, quia tutius est id ex incerto accipere, quod minus est. qualitatis autem, quod aliae dedicativae sunt, quae dedicant aliquid de quopiam, ut: *Virtus bonum est*; dedicat enim virtuti inesse bonitatem, aliae abdicativae, quae abdicant aliquid de quopiam, ut: *Voluptas non est*

THE *PERI HERMENEIAS* OF APULEIUS

I. The study of wisdom, which we call philosophy, seems to most people to have three species or parts: the natural, the moral and the rational, in which is contained the art of arguing [*ars disserendi*], and which I have proposed to treat at this point. But although we argue by means of speech, of which there are various kinds (for example, ordering, commanding, inflaming, wishing, vowing; expressing anger, hatred, envy, favour, pity, amazement, disdain, reproof, penitence, lamentation; as well as producing pleasure and inflicting fear—it is the mark of an outstanding speaker, by [use of] these, to present broad things in a narrow way, narrow things in a broad way, ordinary things in a becoming way, new things in a familiar way, familiar things in a new way ***, to diminish great things, and to be able to produce the largest things from the smallest, and very many other things of this kind), the one of these which is the most important for my topic is that which is called statemental [*pronuntiabilis*]. It expresses a complete meaning and is the only one of all of them that is subject to truth or falsity. Sergius calls it an *effatum*, Varro a *proloquium*, Cicero an *enuntiatum*, the Greeks a πρότασις and then an ἀξίωμα, while I, rendering literally, call it both a *protensio* and a *rogamentum*; but it will be more appropriately called a proposition [*propositio*].

II. Now, propositions, just like their consequences, are of two kinds. One is the predicative, which, furthermore, is simple, as if we were to say: *He who reigns is happy*. The other is the substitutive or conditional, which, furthermore, is composite, as if you were to say: *He who reigns is happy, if he is wise*; for you set a condition, according to which he may not be happy unless he is wise. We shall now go on to talk about the predicative proposition, because it is prior by nature and occurs as an element of the substitutive.

III. There are, too, other differences—of quantity and quality. There are certainly those of quantity, because some are universal, e.g., *Every breathing thing lives*; others are particular, e.g., *Some animals do not breathe*; others are indefinite, e.g., *An animal breathes*—for this does not determine whether every or some [animal breathes], but nevertheless it always holds as the particular, because it is safer to take that which is less from what is uncertain. On the other hand there are those of quality, because some are dedicative, which affirm something of some thing, e.g., *Virtue is a*

bonum; abdicat enim voluptati inesse bonitatem. at Stoici hanc quoque dedicativam putant, cum inquiunt: *Evenit cuidam voluptati bonum non esse*; ergo dedicat, quid evenerit ei, id est, quid sit. idcirco dedicativa, inquiunt, est, quia ei, in quo negavit esse, dedicat id, quod non videtur esse. solum autem abdicativum vocant, cui negativa particula praeponitur. verum hi quidem cum in aliis tum in hac re vincuntur, si qui ita rogaverit: *Quod nullam substantiam habet, non est*; cogentur enim secundum quod dicunt confiteri esse, quod non est, quod nullam substantiam habet.

IV. Ceterum propositio, ut ait in Theaeteto[1] Plato, duabus paucissimis orationis partibus constat, nomine et verbo, ut: *Apuleius disserit*, quod aut verum aut falsum est et ideo propositio est. unde quidam rati sunt has duas solas orationis esse partes, quod ex his solis fieri possit perfecta oratio, id est, quod abunde sententiam comprehendant. adverbia autem et pronomina et participia et coniunctiones et id genus cetera, quae grammatici numerant, non magis partes orationis esse quam navium aplustria et hominum pilos aut certe in universa compage orationis vice clavorum et picis et glutinis deputanda. porro ex duabus praedictis partibus altera subiectiva nominatur velut subdita,[2] ut *Apuleius*; altera declarativa, ut *disserit*, *non disserit*; declarat enim, quid faciat Apuleius. licet autem eadem vi manente utramvis partem in plura verba protendere, ut si pro *Apuleio* dicas *philosophum Platonicum Madaurensem*, item *pro disserendo* dicas eum *uti oratione*. plerumque autem subiectiva minor est, declarativa maior et non hanc modo sed alias quoque subiectivas comprehendens. non enim solus Apuleius disserit sed et alii plurimi, qui sub eadem declaratione possunt contineri, nisi forte proprium cuiuspiam de eo declaretur, ut si dicas: *Qui equus est, hinnibile est*; at proprium est equi hinnire. et idcirco in his propriis par est declarativa, par subdita, ac non ut in ceteris maior, quippe cum eadem possit mutata vice subdita fieri et, quam prius habuerit subditam, nunc habere sui declarativam, ut si verso ordine ita dicas: *Quod hinnibile est, equus est*. at non itidem, ubi

[1] Although *Theaetetus* 206D does make a gesture in the relevant direction, it is at least likely that Apuleius here confuses it with the discussion at *Sophist* 261-262, in which the noun/verb analysis of the proposition is treated in more explicit detail.

[2] We have gratefully adopted a suggestion of Professor L.M. de Rijk to the effect that *velut subdita* should be read as *vel subditiva*. It is made clear a few sentences on that *subdit(iv)a* is just an alternative label for *subiectiva*, so that the explanatory force of *velut* would be misleading. [N.B. Thomas notes that one manuscript has *vel*.] To render *subdit(iv)a*, we have preferred to extend the sense of the existing English word "subordinative" rather than to coin the non-transparent "subditive" which would result from simple transliteration.

good, for it affirms that goodness is part of virtue; others are abdicative, which deny something of some thing, e.g., *Pleasure is not a good*, for it denies that goodness is part of pleasure. But the Stoics think that this too is dedicative, when they say: *It happens for some pleasure that it is not a good.* So it affirms what has happened to it; that is, what it is. For that reason they say it is a dedicative because it affirms what does not seem to be the case in that which has denied that it is the case. And they call an abdicative only that to which a negative particle is prefixed. But these men are certainly overcome, not only in other things but also in this matter, if anyone should propose the following: *What has no substance does not exist*; for they will be forced, according to what they say, to admit that what does not exist, because it has no substance, *does* exist.

IV. Moreover, a proposition, as Plato says in the THEAETETUS,[1] consists of two very special parts of speech, the noun and the verb, e.g., *Apuleius argues*, which is either true or false, and so is a proposition. From this, some men have thought that these two are the only parts of speech, because a complete utterance can be made from these alone—that is, because they express a meaning very well. Indeed, adverbs, pronouns, participles, conjunctions and other such things which grammarians list are no more parts of speech than ornamented curved sterns are parts of ships and hair of men; or at least they are fit to be classed in the general structure of speech like nails, pitch and glue.

Henceforth, of the two parts already mentioned one is called the subjective or the subordinative,[2] e.g., *Apuleius*; the other is called the declarative, e.g., *argues*, *does not argue*; for it declares what Apuleius does. But one is permitted to extend either part into several words, with the force remaining the same, as if you were to say *the Platonic philosopher from Madaura* for *Apuleius*, and likewise if you were to say that he is *using speech* for *arguing*. But for the most part the subjective is the smaller and the declarative is the greater [in extension], embracing not only this but also other subjectives. For not only Apuleius argues, but so do very many others, who can be included under this same declaration, unless it happens that a property of something is declared of it, as if you were to say: *He who is a horse is a neigher*, and it is a property of a horse to neigh. And so in the case of these properties the declarative is equal to the subordinative and is not the greater as in other cases, for it may be interchanged with the same subordinative, and what it had formerly as subordinative it now has as its declarative, as if, with the order changed, you were to say: *That which is a neigher is a horse*. But when the parts are unequal, you may not be able to ring the changes in the same way. For because *Every man is an animal* is true, if you convert it, *Every animal is a man* will not on that account be true. For although being a neigher is a

impares partes, convertere vices possis. non enim, quia verum est *omnem hominem animal esse*, idcirco, si convertas, verum erit *omne animal hominem esse*. neque enim ut proprium est equi hinnibile, ita proprium est homini animal esse, cum sint animalia alia innumera. agnoscitur hic de pluribus declarativa, licet converso ordine rogamentum proponatur, primo, quod plura comprehendere potest declarativa quam subdita, dehinc, quod nunquam vocabulo sed semper verbo terminatur, quo praecipue etiam in illis proprietatibus a pari subiectiva discernitur. id etiam pro similitudine tenendum est, quia, ut sunt propositiones definitae et indefinitae, ita etiam constat particulas tam subiectivas quam declarativas partim definitas esse, ut *homo*, *animal*, partim indefinitas, ut *non homo*, *non animal*; non enim definiunt, quid sit, cum hoc non sit, sed tantum ostendunt aliud praeter hoc esse.

V. Nunc dicendum est, quemadmodum quattuor illae propositiones inter se affectae sint, quas non ab re est in quadrata formula spectare. sint igitur in superiore linea, ut infra scriptum est, universalis dedicativa et abdicativa, ut: *Omnis voluptas bonum est*, *omnis voluptas bonum non est*, dicanturque hae inter se incongruae. item in inferiore linea sub utraque particulares subnotentur: *Quaedam voluptas bonum est*, *quaedam non est bonum*, dicanturque inter se hae subpares. deinde obliquae ducantur lineae angulares, altera pertingens ab universali dedicativa ad particularem abdicativam, altera a particulari dedicativa ad universalem abdicativam; quae inter se et quantitate et qualitate contrariae alterutrae nominentur, quod iam necesse est alterutram veram esse, quae dicitur perfecta pugna et integra. at inter subpares et incongruas pugna dividua est, quod incongruae nunquam quidem fiunt simul verae, interdum tamen simul mentiuntur, subpares autem mutata vice nunquam quidem simul mentiuntur, interdum tamen fiunt simul verae. et ideo utriusvis harum revictio confirmat alteram, non tamen et utriusvis confirmatio revincit alteram. de incongruis qui utramvis posuit, utique alteram tollit, non tamen mutata vice qui utramvis tollit, utique alteram ponit. enimvero de alterutris qui utramvis comprobat, utique alteram refutat, qui utramvis tollit, utique alteram comprobat. ceterum universalis utravis particularem suam comprobata utique confirmat, revicta non utique infirmat. particularis autem versa vice universalem suam revicta utique infirmat, probata non utique confirmat. haec omnia ita esse, ut dicimus, ex ipsis propositionibus facile ostenditur infra scriptis.[3]

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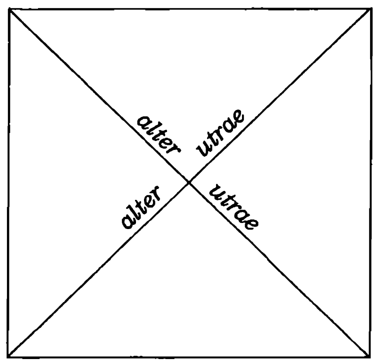
[3] The diagram given here is that described by Apuleius, and does not match the one in the Thomas text. For a discussion of the form of the Square of Opposition diagram, see Appendix B.

property of a horse, yet being an animal is not a property of a man, since there are countless other animals. The declarative is recognised here by several things, even if the proposition is presented in reverse order: first, by the fact that the declarative can embrace more things than the subordinative, and second, by the fact that it is never expressed by a noun but always by a verb. By the latter feature especially it is distinguished from an equal subjective [i.e., equal in extension] even in the case of those properties. This should also be taken as a similarity [between subjective and declarative], that, just as propositions are definite and indefinite, so it is also the case that some particles, subjective as well as declarative, are definite, e.g., *man*, *animal*, and others indefinite, e.g., *not-man*, *not-animal*; for the latter do not define what it is, since it is not this thing, but merely show that it is something other than this.

V. Now it is time to discuss how those four propositions are related to one another—and it is useful to consider them in a squared figure. So, as is written below, let there be dedicative and abdicative universals on the top line, e.g., *Every pleasure is a good*, *Every pleasure is not a good*. These may be said to be inconsistent with one another. Likewise on the bottom line, under each of them, let the particulars be written, e.g., *Some pleasure is a good*, *Some [pleasure] is not a good*. These may be said to be nearly equal to one another. Then let the oblique angular lines be drawn, one stretching from the universal dedicative to the particular abdicative, the other from the particular dedicative to the universal abdicative. Those [pairs of propositions], which are opposite to one another in both quantity and quality, may be called alternates, because it is indeed necessary that one or the other be true, which is said to be a complete and total conflict. But the conflict between the nearly-equals and the inconsistents is divided because the inconsistents never become true at the same time, nevertheless they are sometimes false at the same time; but the nearly-equals, on the other hand, are never false at the same time, nevertheless they sometimes become true at the same time. And so the refutation of one of these [nearly-equals] confirms the other, yet the confirmation of one does not refute the other. He who has posited one of the inconsistents undoubtedly cancels the other, but on the other hand it is not the case that he who cancels one posits the other. To be sure, he who establishes one of the alternates undoubtedly refutes the other, and he who cancels one establishes the other. In addition, either universal, once established, undoubtedly confirms its particular, but refuted, it does not invalidate it. But, on the other hand, the particular, once refuted, undoubtedly invalidates its universal, but established, it does not confirm it. It is easily shown, from the very propositions written below, that all these things are just as we say.[3]

incongruae

Omnis voluptas bonum est — *Omnis voluptas bonum non est.*



Quaedam voluptas bonum est. — *Quaedam voluptas bonum non est.*

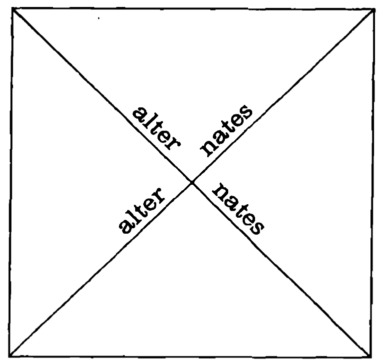
subpares

Certum est enim, quod concedat, qui aliquid proposuerit. destruitur autem utravis universalis trifariam, dum aut particularis eius falsa ostenditur aut utravis ex duabus ceteris vera, sive incongrua sive subneutra. instruitur autem uno modo, si alterutra eius falsa ostenditur. contra particularis uno quidem modo destruitur, si alterutra eius vera ostenditur; instruitur autem trifariam, si aut universalis eius vera est aut utravis ex duabus ceteris falsa, sive subpar eius sive subneutra. eadem servabimus etiam in aequipollentibus propositionibus. aequipollentes autem dicuntur, quae alia enuntiatione tantundem possunt et simul verae fiunt aut simul falsae, altera ob alteram scilicet, sicut indefinita et particularis. item omnis propositio, si assumat in principio negativam particulam, fit alterutra eius aequipollens, ut cum sit universalis dedicativa: *Omnis voluptas bonum*, si ei negatio praeponatur, fiet: *Non omnis voluptas bonum*, tantundem valens, quantum valebat alterutra eius: *Quaedam voluptas non est bonum.* hoc in ceteris tribus propositionibus intellegendum est.[4]

[4] For ease of reading, we shall hereafter translate Apuleius's propositional examples by the more conventional English forms, "Every pleasure is good", "Some pleasure is not good", etc., rather than the strictly correct forms, "Every pleasure is a good (thing)", "Some pleasure is not a good (thing)" used hitherto. The general Apuleian practice can be illustrated from the universal dedicative example in P.H. V, *Omnis voluptas bonum est.* The use of a neuter declarative particle here enables Apuleius to render faithfully the Aristotelian demand for interchangeability of terms—hence his *Omnis voluptas bonum est* rather than the predicative adjectival form *Omnis voluptas bona est.* Our conventional English form "Every pleasure is good" is ambiguous between these two Latin forms—but in what follows such English versions should always be read as translations of the former type of Latin expression.

inconsistents

Every pleasure is a good. | Every pleasure is not a good.



Some pleasure is a good. | Some pleasure is not a good.

nearly-equals

It is indeed certain that whoever has proposed something assents to it. But either universal is destroyed in three ways, by showing either that its particular is false or that one of the other two is true—either its inconsistent or its alternate [here: *subneutra*]. Yet it is established in one way, namely if its alternate is shown to be false. On the other hand, the particular is destroyed in one way, namely if its alternate is shown to be true; but it is established in three ways, if either its universal is true or one of the other two is false—either its nearly-equal or its alternate. We shall observe the same things in equipollent propositions. [Those propositions] are said to be equipollent which have just as much power in another form of words, and which become true at the same time or false at the same time, one on account of the other of course, such as an indefinite and a particular. Moreover, every proposition becomes equipollent with its alternate if it takes on a negative particle at the beginning—for example, supposing that it is the universal dedicative: *Every pleasure is a good*, if a negation is prefixed to it, it will become: *Not every pleasure is a good*, which is sound to just the same extent as was its alternate: *Some pleasure is not a good*. This must be understood to hold for the other three propositions.[4]

VI. Deinde de conversione. conversibiles propositiones dicuntur universalis abdicativa et alterutra eius, id est particularis dedicativa, eo quod particulae earum, subiectiva et declarativa, possunt semper inter se versare vices permanente condicione veritatis aut falsitatis. nam ut vera est haec propositio: *Nullus prudens impius*, ita, si convertas partium vices, verum erit: *Nullus impius prudens*. item ut falsum est: *Nullus homo animal*, ita et, si convertas, falsum erit: *Nullum animal homo*. pari ratione et particularis dedicativa convertitur: *Quidam grammaticus homo est*, et contra: *Quidam homo grammaticus est*. quod duae ceterae propositiones semper facere non possunt, quamquam interdum convertantur. nec tamen idcirco conversibiles dicuntur; nam quod alicubi fallitur, certo repudiatur. ergo unaquaeque propositio per omnes significationes † reperienda est, an etiam conversa congruat. nec universe verae sunt istae, sed quinque solae: aut enim proprietas declaratur alicuius aut genus aut differentia aut finis aut accidens. nec praeter haec unquam <quicquam> inveniri potest in ulla propositione, ut si *hominem* substituas, quicquid de eo dixeris, aut proprium eius significaveris, ut *cachinnabile*, aut genus, ut *animal*, aut differentiam, ut *rationale*, aut definitionem, ut *animal rationale mortale*, aut accidens, ut *orator*. quippe omne declarativum alicuius aut potest eius vicissim fieri subiectivum aut non potest. sed si potest, aut significat quid sit, et est definitio, aut non significat, et est proprium. sin autem non potest, aut id est quod in definitione poni debeat, atque est genus vel differentia, aut quod non debeat, et est accidens. igitur per haec agnoscetur particularis abdicativa non esse conversibilis. universalis autem dedicativa et ipsa quidem non est conversibilis, sed particulariter tamen potest converti, ut cum sit: *Omnis homo animal*, non potest ita converti, ut sit: *Omne animal homo*, sed particulariter potest: *Quoddam animal homo*. verum hoc in simplici conversione, quae in conclusionum illationibus reflexio nominatur. est enim et altera propositionum conversio, quae non tantum ordinem, sed etiam ipsas particulas in contrarium perducit, ut quae definita est, indefinita fiat, et contra quae indefinita est, definita. hanc conversionem vicissim reliquae duae admittunt, universalis dedicativa et particularis abdicativa, ut: *Omnis homo animal*; *omne non animal non homo*; item: *Quoddam animal non est rationale*; *quoddam non rationale animal*. id ita esse perpetuo, ut dicimus, per illas quinque praedictas species explorabis.

VI. Next, [we turn to] conversion. The universal abdicative and its alternate, i.e., the particular dedicative, are said to be convertible propositions, because their subjective and declarative particles can always be interchanged while the condition of truth or falsity remains the same. For just as this proposition is true: *No wise man is impious*, so, if you interchange the parts, this will be true: *No impious man is wise*. Similarly, just as this is false: *No man is an animal*, so too, if you convert it, this will be false: *No animal is a man*. And by the same reasoning the particular dedicative is converted: *Some grammarian is a man*, and on the other hand: *Some man is a grammarian*. The other two propositions cannot always do that, although they may sometimes be converted. For this reason, however, they are not said to be convertible; for what somewhere is [proved to be] uncertain, is certainly rejected. So, for each proposition it has to be ascertained whether the converse agrees [in truth or falsity], by [considering] all the meaning-bearing expressions. It is not the case that such expressions are suitable in general—but there are only five kinds [of such expressions]: for what is declared of something is either a property, a genus, a difference, a definition or an accident. Nothing except these things can ever be found in any proposition. If, for example, you were to take *man* [as subjective particle], you would say something about him by indicating of him either a property, e.g., *capable of laughing*; or a genus, e.g., *animal*; or a difference, e.g., *rational*; or a definition, e.g., *rational mortal animal*; or an accident, e.g., *orator*. For every declarative of something can in turn be made a subjective signifying it or it cannot. But if it can, it either indicates what it is, and is a definition, or it does not indicate that and is a property. But if it cannot, then it is either what ought to be placed in a definition, and is a genus or a difference, or it is what ought not [be placed in a definition], and is an accident. So through these things it will be ascertained that the particular abdicative is not convertible. But also the universal dedicative is certainly not convertible in itself, but it can nevertheless be converted particularly. For example, *Every man is an animal* cannot be converted to become *Every animal is a man*, but it can [be converted] particularly: *Some animal is a man*. This is really a type of simple conversion, which is called conversion by inference of a conclusion. For there is yet another conversion of propositions, which leads not only the order, but even the particles themselves, to an opposite state, so that what is definite becomes indefinite, and, on the other hand, what is indefinite becomes definite. The remaining two, the universal dedicative and the particular abdicative, in turn admit this kind of conversion; e.g., *Every man is an animal*; *Every non-animal is a non-man*; similarly, *Some animal is not rational*; *Some non-rational thing is an animal*. You will observe through these five kinds mentioned above that it is always just as we say.

VII. Coniugatio autem propositionum dicatur ipsa conexio earum per aliam communem particulam, qua inter se copulantur; ita enim possunt ad unam conclusionem consentire. quae particula communis necesse est aut in utraque propositione subiecta sit aut in utraque declarans aut in altera subiecta, in altera declarans. tres igitur formulae fiunt, quarum prima dicatur, cum illa communis particula in altera subiecta, in altera declarans est. qui ordo non numeri ratione sed conclusionum dignitate contentus est. quippe ultima formula est tertia, quia nihil in ea nisi particulare concluditur. hac superior est secunda, quae habet conclusiones universales, sed tamen abdicativas tantum. et ideo sic prima pollet, quia in omne genus illationum concluditur. dico autem illationem vel illativum rogamentum, quod ex acceptionibus colligitur et infertur. porro acceptio est propositio, quae conceditur a respondente, ut si quis ita proponat: *Estne omne honestum bonum?* propositio est, et si assentiri se dicet, fit acceptio remota interrogatione. quae et ipsa tamen communiter appellatur propositio: *Omne honestum bonum est.* huic iunge alteram acceptionem similiter propositam et concessam: *Omne bonum utile est.* ex hac coniugatione, ut mox ostendemus, primi modi fit illativum, si directim, universale: *Omne igitur honestum utile est*, si reflexim, particulare: *Quoddam igitur utile honestum est*, quia particulariter tantum in reflexionibus converti potest universalis dedicativa. directim autem dico inferri, cum eadem particula subiecta est tam in coniugatione quam in ipsa illatione itemque declarans eadem, cum est utrobique; reflexim vero, cum hoc fit versa vice. ceterum tota ratiocinatio ista, quae acceptionibus et illatione constat et collectio vel conclusio nominatur, secundum Aristotelem commodissime potest ita definiri: *Oratio, in qua concessis aliquibus aliud quiddam praeter illa, quae concessa sunt, necessario evenit, sed per illa ipsa concessa.* in qua definitione et orationis species non alia quam pronuntiabilis intellegenda est, quae, ut supra diximus, sola aut vera est aut falsa, et *concessis aliquibus* pluraliter dictum est, quia ex una acceptione non fit collectio, licet Antipatro Stoico contra omnium sententiam videatur plena conclusio esse: *Vides, vivis igitur*, cum sit illo modo plena: *Si vides, vivis; atqui vides, vivis igitur.* item, quia concludere volumus, non quod concessum est nobis, sed quod negatum, idcirco in definitione dixit *aliud quiddam praeter illa, quae concessa sunt, necessario evenire.* quapropter supervacanei sunt moduli Stoicorum non idem differenter peragentes: *Aut dies est aut nox; atqui dies est*; item idem geminantes: *Si dies est, dies est; dies igitur est.* frustra enim colligunt, quod sine controversia ultro conceditur. illud potius verisimile est, cum dico: *Si dies est, lucet; atqui dies est, igitur lucet*, non † male colligere, praeter quod accepi. nam quod est in conclusione *lucet*, fuerat et in propositione. hoc tamen ita refutabimus, aliter dici in conclusione *igitur lucet*, ut ostendatur nunc lucere, aliter in propositione accep-

VII. A conjugation of propositions may be said to be their union through some common particle, by which they are joined together; for thus they are able jointly to determine one conclusion. It is necessary that this common particle should be either subjective in each proposition or declarative in each, or subjective in one and declarative in the other. Therefore, there come to be three formulas, of which the first may be said to be that in which that common particle is subjective in one and declarative in the other. This ranking is not numerical but rests on the worth of the conclusions. For the last formula is the third, because nothing except the particular is concluded in it. The second, which has universal conclusions but nevertheless only abdicatives, is superior to this one. And the first prevails for this reason, that it is rounded off into every kind of conclusion. Now, what is collected from acceptances and inferred I call a conclusion or an illative proposition. Further, an acceptance is a proposition which is granted by one answering—for example, if someone were to pose the question: *Is every honourable thing good?*, it is a proposition, and, if he says that he assents, it becomes an acceptance, since the interrogative aspect has been removed. Nevertheless, this is just what is commonly called a proposition: *Every honourable thing is good*. Join to this another acceptance similarly proposed and conceded: *Every good thing is useful*. From this conjugation, as we shall show presently, comes the conclusion of the first mood—a universal, if it comes directly: *Therefore every honourable thing is useful*; but, if conversely, a particular: *Therefore some useful thing is honourable*, because the universal dedicative can only be changed into its converse particularly. Now, I say that something is inferred directly when the same particle is subjective just as much in the conjugation as in the conclusion itself, and, when this holds for both parts, the declarative is likewise the same; when this is reversed, [it is inferred] conversely. Moreover, that whole form of reasoning which consists of acceptances and a conclusion, and is called a collection or an inference, can most conveniently be defined thus, following Aristotle: *A speech in which some things having been conceded, something other, beyond those which have been conceded, follows by necessity, but through those very things which have been conceded*. In this definition the kind of speech must not be understood as anything but statemental, which, as we said above, is the only one which is true or false, and *some things having been conceded* is put in the plural, because a collection does not arise from one acceptance, although for Antipater the Stoic there seems, contrary to everyone's opinion, to be a complete inference: *You see, therefore you live*, when it is complete [only] in this manner: *If you see, you live; but you see, therefore you live*. Similarly, because we want to conclude not what has been conceded to us but what has been denied, so in the definition he said: *something*

tum, in qua non est dictum nunc lucere, sed tantum consequens esse, ut, si dies sit, utique et luceat. multum autem refert, itane nunc affirmes aliquid esse an tantum solere esse, cum aliud quiddam praecesserit.[5] item illud, quod in eadem definitione necessitas comprehensa est, factum est, ut conclusionis vis a similitudine inductionis distingueretur. nam et in inductione quaedam conceduntur, ut puta: *Homo inferiorem malam movet, equus inferiorem movet, item bos et canis*. in istis acceptionibus in conclusione aliud quid infertur: *Ergo et omne animal inferiorem malam movet*. quod cum sit in crocodilo falsum, potes superioribus concessis illationem ipsam non recipere, quam tibi in conclusione non licuisset recusare, quippe cuius illatio in ipsis acceptionibus continetur. et ideo in ea additum est *necessario evenire*. ne ultima quidem pars definitionis vacat, sed ostendit ex eisdem ipsis, quae concesserit, evenire debere illationem, ceterum ratam non fore. ac de his quidem satis dictum.

VIII. Nunc tradendum est, quibus modis et coniugationibus fiant intra certum numerum praedicativi generis verae conclusiones. quippe in prima formula novem soli moduli, sex autem coniugationes reperiuntur; in secunda quattuor moduli, tres coniugationes; in tertia sex moduli, quinque coniugationes. de quibus hic iam suo ordine demonstrabo praefatus neque ex particularibus solis neque abdicativis solis ratam fieri conclusionem, quia saepe possunt et falsa conducere. item quamlibet multis dedicativis si utravis abdicativa iungatur, dedicativam non, sed abdicativam fieri illationem: tantum vel una mixta ceteris praevalet. similis etiam particularium vis est; utravis enim mixta universalibus particularem facit illationem.

[5] See Appendix C for discussion of problems about the foregoing criticisms of "the moods of the Stoics".

other, beyond those which have been conceded, follows by necessity. On account of this, those moods of the Stoics which accomplish what is not the same in a different manner are superfluous: *Either it is day or night; but it is day*; similarly, those which repeat the same thing: *If it is day, it is day; therefore it is day.* For in vain they infer what is conceded spontaneously without dispute. That is rather like the case when I say: *If it is day, it is light; but it is day, therefore it is light,* which does not infer beyond what I have accepted. For what is in the conclusion, *it is light,* was also in the premiss. We shall nevertheless refute it in this way: it is said in one way in the conclusion, *therefore it is light,* in order that it be shown that it is now light, but it was accepted in another way in the premiss, in which it was not said that it is now light but only that it is a consequence that if it were day, then it would be light. But it matters a lot whether you affirm that something is now the case, or only that it is usually the case when something else has preceded it.[5] Again, that necessity was incorporated in the same definition happened so that the strength of the inference [*conclusio*] would be distinguished from any likeness to [that of] an induction. For in an induction also certain things are conceded; for example consider: *Man moves his lower jaw, the horse moves his lower jaw, likewise the ox and the dog.* From these acceptances something else is inferred in the conclusion: *Therefore every animal moves its lower jaw.* Since this is false in the case of the crocodile, even though you have conceded the above premisses, you are able not to accept that conclusion, which you would not be allowed to deny in a [deductive] inference, for its conclusion is contained in the acceptances themselves. For that reason, *follows by necessity* was added in the definition. Not even the last part of the definition is empty, but it shows that the conclusion ought to follow from those very same things which one has conceded, otherwise it would not be valid. Enough has surely been said about these matters.

VIII. Now it is time to treat in which moods and conjugations genuine conclusions of the predicative kind may occur up to a certain number. For in the first formula there are found only nine moods, but six conjugations; in the second there are four moods and three conjugations; in the third, six moods and five conjugations. Here I shall now show these things in order, after first stating that neither from particulars alone nor from abdicatives alone is a valid conclusion made, because they can often bring together the false as well. Also, if either abdicative is joined to as many dedicatives as you like, the conclusion becomes not dedicative but abdicative; if you like, only one mixed with the others prevails. The force of the particulars is also the same; for either one mixed with universals makes the conclusion particular.

IX. Igitur in prima formula modus primus est, qui conducit ex universalibus dedicativis dedicativum universale directim, ut: *Omne iustum honestum, omne honestum bonum; omne igitur iustum bonum est.* at si reflexim inferas: *Quoddam igitur bonum iustum,* fit ex eadem coniugatione quintus modus. nam sic tantum reflecti posse universalem dedicativam supra docui. secundus modus est, qui conducit ex universalibus dedicativa et abdicativa abdicativum universale directim, ut: *Omne iustum honestum, nullum honestum turpe; nullum igitur iustum turpe.* at si reflexim inferas: *Nullum igitur turpe iustum,* sextum modum effeceris. nam, ut dictum est, reflectitur in se universalis abdicativa. tantum meminisse debemus subiectivum ex dedicativa trahendum ad illationem in secundo modo atque ideo eam priorem aestimandam, licet ante abdicativa enuntietur. similiter et in ceteris prior potestate prior intellegatur. in sexto autem modo trahitur subiectivum ex abdicativa. haec sola differentia eorum. item tertius modus, qui conducit ex dedicativis particulari et universali dedicativum particulare directim, ut: *Quoddam iustum honestum, omne honestum utile; quoddam igitur iustum utile.* sed si reflexim inferas: *Quoddam igitur utile iustum,* septimum modum feceris. nam, ut dictum est, reflectitur in se particularis dedicativa. quartus modus est, qui conducit ex particulari dedicativa et universali abdicativa abdicativum particulare directim, ut: *Quoddam iustum honestum, nullum honestum turpe; quoddam igitur iustum non est turpe.* ex hoc modo contrariae vices inveniuntur prioribus. octavus et nonus quippe servant eius illationem non ut illi reflexam. coniugationem ipsam tantum reflectunt propositionibus aequipollentibus mutatoque ordine, ut prior fiat abdicativa. atque ideo conducere dicuntur ambo per coniugationis conversionem. nam et si abdicativam universalem quarti convertas et subicias ei universalem dedicativam, quam converterat[6] particularis eius dedicativa, fiet octavus modus, qui conducit ex universalibus abdicativa et dedicativa particulare abdicativum reflexim, velut: *Nullum turpe honestum, omne honestum iustum; quoddam igitur iustum non est turpe.* nonus quoque modus per similem conversionem ex universali abdicativa et particulari dedicativa abdicativum particulare conducit reflexim: *Nullum turpe honestum, quoddam honestum iustum; quoddam igitur iustum non est turpe.* cur autem solus quartus modus duos genuerit, ceteri singulos, illa ratio est, quia, primi modi si utramque propositionem convertamus, fiet coniugatio irrita duarum particularium, sin alteram tantum, fiet aut secunda formula aut tertia. item secundi modi si utramque convertas, fiet coniugatio noni, quam iam ostendimus ex

[6] Apuleius has us obtain the conjugation of the eighth mood from that of the fourth by placing under the converse of the universal abdicative *universalem dedicativam, quam converterat particularis eius dedicativa.* In order to make both logical and grammatical sense of this, we have been forced to take *convertere* to mean 'to be the converse of'.

IX. So in the first formula the first mood is that which brings together directly a universal dedicative from universal dedicatives, e.g., *Every just thing is honourable, every honourable thing is good; therefore every just thing is good.* But if you were to infer conversely: *Therefore some good thing is just*, the fifth mood comes from the same conjugation. For, as I explained above, the universal dedicative can only be converted in this way. The second mood is that which brings together directly a universal abdicative from a universal dedicative and abdicative, e.g., *Every just thing is honourable, no honourable thing is base; therefore no just thing is base.* But if you were to infer conversely: *Therefore no base thing is just*, you would produce the sixth mood. For, as has been said, the universal abdicative is converted into itself. But we must remember that the subjective should be drawn from the dedicative to the conclusion in the second mood and for this reason it ought to be considered the first, although the abdicative may be stated before it. And, similarly, in the rest the first in power may be understood to be the first. But in the sixth mood the subjective is drawn from the abdicative. This is their only difference. Likewise the third mood, which brings together directly a particular dedicative from particular and universal dedicatives, e.g., *Some just thing is honourable, every honourable thing is useful; therefore some just thing is useful.* But if you were to infer conversely: *Therefore some useful thing is just*, you would make the seventh mood. For, as has been said, the particular dedicative is converted into itself. The fourth mood is that which brings together directly a particular abdicative from a particular dedicative and a universal abdicative, e.g., *Some just thing is honourable, no honourable thing is base; therefore some just thing is not base.* From this mood changes are found which are the reverse of the foregoing [i.e., from those of the first, second and third moods]—for the eighth and ninth keep its conclusion, not the converse like them [i.e., the fifth, sixth and seventh moods]. They change only the conjugation itself to equipollent propositions, and the order is changed so that the abdicative becomes the first. And so both are said to bring together [their conclusion] through conversion of the conjugation. For if you were to convert the universal abdicative of the fourth and place under it a universal dedicative, of which its particular dedicative [i.e., that of the fourth] had been the converse,[6] it will become the eighth mood, which brings together conversely a particular abdicative from abdicative and dedicative universals, e.g., *No base thing is honourable, every honourable thing is just; therefore some just thing is not base.* The ninth mood, too, through a similar conversion brings together conversely a particular abdicative from a universal abdicative and a particular dedicative: *No base thing is honourable, some honourable thing is just; therefore some just thing is not base.* But the reason why the fourth mood alone should have produced two and the

quarto gigni, quia universalis dedicativa secundi modi non nisi particulariter converti potest, sin alteram tantum, fiet secunda formula aut tertia. ex hisce igitur in prima formula modis novem primi quattuor indemonstrabiles nominantur, non quod demonstrari nequeant, ut universi maris aestimat<io, aut> quod non demonstrentur, sicut circuli quadratura, sed quod tam simplices tamque manifesti sunt, ut demonstratione non egeant, adeo ut ipsi ceteros gignant fidemque illis ex se impertiant.

X. Nunc secundae formulae modos trademus. primus modus in secunda formula est, qui conducit ex universalibus dedicativa et abdicativa abdicativum universale directim, velut: *Omne iustum honestum, nullum turpe honestum; nullum igitur iustum turpe.* hic redigitur in secundum indemonstrabilem conversa eius secunda propositione. secundus modus est, qui conducit ex universalibus abdicativa et dedicativa abdicativum universale directim, velut: *Nullum turpe honestum, omne iustum honestum; nullum igitur turpe iustum.* hic coniugatione non differt a priore, nisi quod subiectivam particulam abdicativa trahit ad illationem, quoniam ita variatus est enuntiationis ordo, quod in prima formula fieri non potest. tertius modus est, qui conducit ex particulari dedicativa et universali abdicativa abdicativum particulare directim, velut: *Quoddam iustum honestum, nullum turpe honestum; quoddam igitur iustum non est turpe.* huius si convertamus universalem abdicativam, fit indemonstrabilis quartus, ex quo hic nascitur. quartus modus est, qui conducit ex particulari abdicativa et universali dedicativa abdicativum particulare directim, ut: *Quoddam iustum non est turpe, omne malum turpe; quoddam igitur iustum non est malum.* hic solus modus tantum per impossibile approbatur. de qua propositione dicemus expositis modis tertiae formulae.

XI. In tertia formula primus modus est, qui conducit ex dedicativis universalibus dedicativum particulare tam directim quam reflexim, ut: *Omne iustum honestum, omne iustum bonum, quoddam igitur honestum bonum*, vel sic: *Quoddam igitur bonum honestum.* quippe non interest, ex utra[que] propositione facias particulam subiectivam, quoniam non interest, utram prius enunties. ideo non recte arbitratus est Theophrastus propter hoc

others one each is this—because if we were to convert each proposition of the first mood, a useless conjugation of two particulars will occur, but if [we were to convert] one only, it will become either the second or third formula. Again, if you were to convert each of the second mood, the conjugation of the ninth will occur, which we have already shown was produced from the fourth, because the universal dedicative of the second mood cannot be converted except particularly; but if [you were to convert] one only, it will become the second or third formula. So of these nine moods in the first formula the first four are called indemonstrables, not because they cannot be proved, like the evaluation of the whole sea, or because they may not be proved, like the squaring of a circle, but because they are so simple and evident that they do not need proof, to such an extent that they themselves produce the other moods and impart a truth to them from themselves.

X. Now we shall treat the moods of the second formula. The first mood of the second formula is that which brings together directly a universal abdicative from dedicative and abdicative universals, e.g., *Every just thing is honourable, no base thing is honourable; therefore no just thing is base.* This is reduced to the second indemonstrable by the conversion of its second proposition. The second mood is that which brings together directly a universal abdicative from abdicative and dedicative universals, e.g., *No base thing is honourable, every just thing is honourable; therefore no base thing is just.* This does not differ in conjugation from the preceding mood, except that it draws the subjective particle from the abdicative to the conclusion, since the order of statement [of the premisses] has been changed in this way—this cannot happen in the first formula. The third mood is that which brings together directly a particular abdicative from a particular dedicative and a universal abdicative, e.g., *Some just thing is honourable, no base thing is honourable; therefore some just thing is not base.* If we were to convert the universal abdicative of this, it becomes the fourth indemonstrable, from which this is produced. The fourth mood is that which brings together directly a particular abdicative from a particular abdicative and a universal dedicative, e.g., *Some just thing is not base, every bad thing is base; therefore some just thing is not bad.* This mood alone is proved only *per impossibile.* We shall say something about this proposition after we have expounded the moods of the third formula.

XI. In the third formula the first mood is that which brings together both directly and conversely a particular dedicative from universal dedicatives, e.g., *Every just thing is honourable, every just thing is good; therefore some honourable thing is good*; or thus: *therefore some good thing is honourable.* For it does not matter from which proposition you make the subjective particle, since it does not matter which you state first. So, on account of

non unum modum hunc, sed duos esse. secundus modus est, qui conducit ex dedicativis particulari et universali dedicativum particulare directim, ut: *Quoddam iustum honestum, omne iustum bonum; quoddam igitur honestum bonum.* tertius modus est, qui conducit ex dedicativis universali et particulari dedicativum particulare directim, ut: *Omne iustum honestum, quoddam iustum bonum; quoddam igitur honestum bonum.* quartus modus est, qui conducit ex universalibus dedicativa et abdicativa abdicativum particulare directim, ut: *Omne iustum honestum, nullum iustum malum; quoddam igitur honestum non est malum.* quintus modus est, qui conducit ex dedicativa particulari et abdicativa universali abdicativum particulare directim, ut: *Quoddam iustum honestum, nullum iustum malum; quoddam igitur honestum non est malum.* sextus modus est, qui conducit ex dedicativa universali et abdicativa particulari abdicativum particulare directim, ut: *Omne iustum honestum, quoddam iustum non est malum; quoddam igitur honestum non est malum.* ex his sex modis primi tres rediguntur ad tertium indemonstrabilem conversa priore propositione primi et secundi. tertius enim secundo eandem coniugationem habet hoc uno differens, quod ex universali trahit particulam subiectivam. propter quod non tantum propositionis verum etiam illationis conversione redigitur ad tertium. item quartus et quintus nascuntur ex indemonstrabili quarto conversis prioribus propositionibus eorum. sextus autem modus nec utraque nec altera redigi conversa ad indemonstrabilem aliquem potest, sed per impossibile tantum approbatur, sicuti quartus in secunda formula, et ideo uterque novissimi numerantur.

XII. Ceterorum autem in omnibus formulis ordinatio facta est pro differentia coniugationum et illationum. nam cum prius sit dedicare quam negare potentiusque [est] universale quam particulare, priores sunt universales particularibus et in utrisque dedicativa [et] illatio; <si> similes sunt, is praeponitur modus, qui celerius ad indemonstrabilem redigitur, id est una conversione, quae una probatio est certos eos ad cludendum modos esse. est et altera probatio communis omnium etiam indemonstrabilium, quae dicitur per impossibile appellaturque a Stoicis prima constitutio vel primum expositum. quod sic definiunt: *Si ex duobus tertium quid colligitur, alterum eorum cum contrario illationis colligit contrarium reliquo.* veteres autem sic definierunt: *Omnis conclusionis si sublata sit illatio, assumpta alterutra propositione tolli reliquam.* quae res inventa est adversus eos, qui concessis acceptionibus id, quod ex illis colligitur, impudenter recusant. per hoc enim compelluntur ad impossibilia, dum ex eo, quod negant, contrarium aliquid invenietur ei, quod ante concesserant. porro

this, Theophrastus was not correct in thinking that this is not one mood but two. The second mood is that which brings together directly a particular dedicative from particular and universal dedicatives, e.g., *Some just thing is honourable, every just thing is good; therefore some honourable thing is good.* The third mood is that which brings together directly a particular dedicative from universal and particular dedicatives, e.g., *Every just thing is honourable, some just thing is good; therefore some honourable thing is good.* The fourth mood is that which brings together directly a particular abdicative from dedicative and abdicative universals, e.g., *Every just thing is honourable, no just thing is bad; therefore some honourable thing is not bad.* The fifth mood is that which brings together directly a particular abdicative from a particular dedicative and a universal abdicative, e.g., *Some just thing is honourable, no just thing is bad; therefore some honourable thing is not bad.* The sixth mood is that which brings together directly a particular abdicative from a universal dedicative and a particular abdicative, e.g., *Every just thing is honourable, some just thing is not bad; therefore some honourable thing is not bad.* Of these six moods the first three are reduced to the third indemonstrable, the first and the second by conversion of their first proposition. And the third has the same conjugation as the second, differing in this one respect, that it draws the subjective particle from the universal. On account of this it is reduced to the third [indemonstrable] by the conversion of not only a premiss but also of the conclusion. Similarly, the fourth and fifth are produced from the fourth indemonstrable by the conversion of their first premisses. But the sixth mood cannot be reduced to any indemonstrable by the conversion of one or other [premiss], but it is proved only *per impossibile*, like the fourth in the second formula, and so both are considered to be last in order.

XII. But, for the others in all the formulas, the arrangement was made according to the difference in the conjugations and conclusions. For, since affirming comes before denying and the universal is more powerful than the particular, the universals are prior to the particulars and, among each, a dedicative conclusion [is prior to an abdicative one]; if they are similar, that mood is placed first which is the more quickly reduced to an indemonstrable, that is, by one conversion, which is one proof that those moods are to be depended on for drawing conclusions. Common to all, even to the indemonstrables, is another proof which is said to be *per impossibile* and called by the Stoics *prima constitutio* or *primum expositum*. They define it in this way: *If a third [proposition] is collected [i.e., is inferred] from two, either of them together with the opposite of the conclusion collects [i.e., entails] the opposite of the remaining one.* But the ancients defined it in this way: *For every inference, if its conclusion were destroyed and either premiss assumed, then the remaining one is destroyed.* This was invented against those

contraria simul esse vera impossibile est. ergo per impossibile compelluntur ad conclusionem. nec frustra constituerunt dialectici eum modum verum esse, cuius adversum illationis cum alterutra acceptione tollit reliquam. at Stoici quidem tantum negativa particula praeposita putant illationem recusari vel ex propositionibus alteram tolli, ut puta: *Omnis, non omnis*; *quidam, non quidam*. veteres vero et per alterutram, igitur bifariam, ut puta: *Omnis, non omnis*; *quidam*. fiunt igitur adversus unamquamque conclusionem contrariae, quae opponantur, octo, quoniam utraque acceptio bifariam tollitur, fiuntque conclusiones bis quaternae modo negativa particula praeposita illationi modo alterutra illationis accepta. exemplo sit primus indemonstrabilis: *Omne iustum honestum, omne honestum bonum*; *omne igitur iustum bonum*. qui hanc illationem negat concessis propositionibus, necesse est dicat: *Quoddam iustum non est bonum*. huic si praeponas priorem ex duobus concessis; *Omne iustum honestum*, fit illatio secundum sextum modum in tertia formula, ut: *Quoddam igitur honestum non est bonum*, quod repugnat secundae propositioni, quae concesserat: *Omne honestum bonum*. haec item omnino opposita conclusio est, si isdem manentibus aequipollentem eius inferas, ut: *Non igitur omne honestum bonum*. similiter et alterae fient duae conclusiones, si, ut nunc praeposuimus priorem propositionem, sic assumamus posteriorem, ut: *Quoddam iustum non est bonum, omne honestum bonum*; fit illatio quarti modi in secunda formula duplex: *Non igitur omne iustum honestum*, vel: *Quoddam igitur iustum honestum non est*. quarum utravis aeque priori propositioni repugnat, quae concesserat: *Omne iustum honestum*. his quattuor conclusionibus manentibus tantum propositio mutata est, si pro eo, quod erat: *Quoddam iustum non est bonum*, facias: *Non omne iustum bonum*; bifariam fit sublata illatio; erunt alterae quattuor conclusiones isdem immutationibus. item si pro eadem facias: *Nullum iustum bonum*, bifariam fit sublata illatio; erunt tertiae quattuor conclusiones dumtaxat in his, quae habebunt universalem illationem; ea enim potest sola trifariam tolli. at in ceteris solae octo. quas, si quis velit, singillatim sub unoquoque per omnes formulas poterit suggerere ad exemplum, quod proposuimus.

who, having conceded the acceptances, impudently deny what is collected from them. For through this they are driven to impossibilities, provided that from what they deny something will be found opposed to what they had conceded before. Moreover it is impossible that opposites are true at the same time. So by that impossibility they are forced to [accept] the conclusion. Dialecticians have determined, and not without reason, that that mood is correct the opposite of whose conclusion together with one or other acceptance destroys the remaining one. But the Stoics certainly think that a conclusion is denied or one of the premisses is destroyed only when a negative particle is prefixed to it, e.g., consider: *Every, not every*; *some, not some*. The ancients indeed [thought that it can be denied] also through its alternate, and therefore in two ways, e.g., consider: *Every, not every, some*. Therefore there come to be eight opposites opposed to each inference, since each acceptance is destroyed in two ways and makes four inferences in each of two ways, one by prefixing the negative particle to the conclusion, and the other by accepting the alternate of the conclusion. For example, let the first indemonstrable be: *Every just thing is honourable, every honourable thing is good*; *therefore every just thing is good*. It is necessary that he who denies this conclusion, having conceded the premisses, should say: *Some just thing is not good*. If you were to place before this the first of the two conceded premisses, *Every just thing is honourable*, the conclusion is made according to the sixth mood in the third formula, namely: *Therefore some honourable thing is not good*, which denies the second proposition, which had conceded that 'every honourable thing is good'. This is also a completely opposed inference, if you were, with [everything else] remaining the same, to infer its equipollent, namely: *Therefore not every honourable thing is good*. And, similarly, two other inferences will occur if, as we have just placed the first premiss before it, we assume the second in this way, *Some just thing is not good*, *every honourable thing is good*—the conclusion of the fourth mood in the second formula occurs in two forms, *Therefore not every just thing is honourable* or *Therefore some just thing is not honourable*. Either of these is equally opposed to the first premiss which had conceded that 'every just thing is honourable'. With these four inferences remaining, only a premiss is changed, if, instead of what was *Some just thing is not good*, you were to make it *Not every just thing is good*. Then the conclusion is destroyed in two ways and there will be four other inferences from the same interchanges. Likewise, if instead of that you were to make it *No just thing is good*, the conclusion is destroyed in two ways. There will be a third four inferences only in [the case of] those which have a universal conclusion, for that alone can be destroyed in three ways. But in other cases there are only eight. If anyone should wish to, he will be able to add these to the example we have proposed, [by running] through all the formulas one by one under each [mood].

XIII. *** ut etiam Peripateticorum more per litteras ordine propositionum et partium commutato sed vi manente sit primus indemonstrabilis: A *de omni* B, *et* B *de omni* Γ; *igitur* A *de omni* Γ. incipiunt a declarante atque ideo et a secunda propositione. hic adeo modus secundum hos pertextus retro talis est: *Omne* Γ B, *omne* B A; *omne igitur* Γ A. Stoici porro pro litteris numeros usurpant, ut: *Si primum, secundum; atqui primum, secundum igitur.* verum Aristoteles in prima formula quattuor solos indemonstrabiles prodidit, Theophrastus et ceteri quinque enumerant. nam propositionem iungens indefinitam colligensque illationem indefinitam *** hoc supervacaneum est tradere, cum indefinita pro particulari accipi<a>tur et idem futuri sint modi, qui sunt ex particularibus. item iam ostendimus in prima formula quattuor; quos si quis velit geminare indefinitam pro particulari accipiens indefinitamque subiciens illationem, erunt omnes octo et viginti.[7] Aristo autem Alexandrinus et nonnulli Peripatetici iuniores quinque alios modos praeterea suggerunt universalis illationis: in prima formula tres, in secunda formula duos, pro quibus illi particulares inferunt, quod perquam ineptum est, cui plus concessum sit, minus concludere.

XIV. Omnes autem modos in tribus eorum formulis certos non nisi undeviginti esse, quos supra ostendimus, comprobatur. quattuor sunt propositiones, duae particulares, duae universales. harum unaquaeque, ut ait Aristo[teles], ut sit subiecta sibi et aliis tribus praeponatur, quaterne scilicet coniungitur atque ita senae denae coniugationes in singulis formulis erunt. harum sex aequaliter in omnibus non valent; duae quidem, cum ex abdicativis utravis alteram praecedit; quattuor autem, cum ex particularibus utravis aut semet praecedit aut alteri subditur. nihil enim concludi potest, ubicunque aut duae particulares sunt aut duae abdicativae. igitur remanent singulis formulis denae coniugationes. porro ex his tam in prima quam in secunda formula duae non valent, cum universalis dedicativa particulari praeponitur. similiter et in prima et tertia formula duae recidantur, quibus aut universalis abdicativa abdicativam universalem aut particularis abdicativa universalem dedicativam antecedit. quo fit, ut remaneant primae formulae sex coniugationes iam in novem modis, reliquis duabus formulis adhuc octonae. ex quibus una in neutra probatur, cum universalis abdicativa

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[7] The correct number is 29, since 10 of Apuleius's 19 valid moods have a particular premiss. In the translation, we have followed the Thomas text's *octo et viginti*. Earlier editors (Oudendorp, Hildebrand) have *novem et viginti*, as found in some MSS.

XIII. *** The first indemonstrable may also be [set out] in the manner of the Peripatetics, using letters and with the order of premisses and parts changed, but with the force remaining the same: *A of every B, and B of every C; therefore A of every C.* They begin from the declarative [of the first premiss] and also from the second premiss. Moreover, this mood, according to them, is woven backwards in this way: *Every C B, every B A; therefore every C A.* Further, the Stoics use numbers in place of letters, e.g., *If the first, the second; but the first; therefore the second.* Aristotle actually produced only four indemonstrables in the first formula, while Theophrastus and the others list five. For joining an indefinite premiss and collecting an indefinite conclusion, *** Treating this is superfluous, since an indefinite is taken in place of a particular and the moods will be the same as those which are from the particulars. Besides, we have already indicated four [moods with a particular premiss] in the first formula, which if anyone wants to double, taking an indefinite for a particular and subjoining an indefinite conclusion, there will be twenty eight[7] in all. But Aristo the Alexandrian and some younger Peripatetics add five other moods (three in the first formula, two in the second formula) besides those with universal conclusions, in place of which they infer particulars. This is extremely unsuitable—to conclude less when more has been conceded to one.

XIV. Now it is established that, of all the moods in their three formulas, only the nineteen which we have exhibited above are certain. There are four propositions, two particulars and two universals. Each of these is, as Aristotle said, certainly joined [with another proposition] in four ways, since it may be placed under itself and placed before the other three, and thus there will be sixteen conjugations in each formula. Of these, six are equally invalid in all—two, when either of the abdicatives precedes the other, and four, when one particular precedes itself or is placed under the other. For nothing can be concluded where there are two particulars or two abdicatives. So ten conjugations remain in each formula. Further, two of these are not valid in either the first or second formula, when the universal dedicative is placed before a particular. Similarly, in both the first and third formulas two may be eliminated, in which either a universal abdicative precedes a universal abdicative or a particular abdicative precedes a universal dedicative. From this it follows that there now remain six conjugations of the first formula in nine moods, yet there are eight in [each of] the remaining two formulas. One of these, when a universal abdicative precedes a particular dedicative is proved in neither [the second nor the third formula]. Of these seven which remain there are now four special cases which are false in the second formula, when a universal dedicative is joined either to itself or to

praecedit particularem dedicativam. ex his septenis, quae supersunt iam propriae, sunt in secunda formula quattuor falsae, cum universalis dedicativa vel sibimet ipsi vel particulari suae utrovis loco iungitur vel cum praecedit alterutra.[8] item propriae in tertia formula duae non valent, cum utravis abdicativa universali dedicativae praeponitur. reliquas certas esse tres in secunda, quinque tertiae formulae supra ostendimus, cum eas ad sex coniugationes primae formulae redigeremus. igitur ex quadraginta octo coniugationibus quattuordecim solae probantur. ceterae triginta quattuor, quas enumeravi, merito repudiantur, quia possunt ex veris falsa concludere; quod cuivis facile est experiri per illas supradictas quinque significationes [generis proprietatis]. at ex illis quattuordecim, quas probavimus, non plures, quam praedictum est, fieri modos docent ipsae illationes, † ut cum directim sumitur tum reflexim, quousque veritas ipsa passa est. praeterea eorum non potest numerus augeri.

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[8] It is hard to make sense of this—i.e., to see what fourth case is being rejected. Thomas follows Prantl in reading *alterutra* where other editors have *altera* (which we prefer). Prantl's reading does nothing to solve the problem since the 4th valid mood of the 2nd formula is precisely that in which the alternate of the universal dedicative precedes it.

its particular in either order, or when the other precedes it.[8] Likewise, there are two special cases that are not valid in the third formula, when either abdicative is placed before a universal dedicative. We showed above that the remaining three in the second formula and five in the third formula are established, since we reduced them to six conjugations in the first formula. Therefore, of the forty eight conjugations, fourteen alone are verified. The other thirty four, which I have listed, are justly rejected, because they can conclude the false from the true—which it is easy for anyone to test through those five kinds of expression of genus, property [etc.] mentioned above. But from those fourteen which we have verified, the conclusions themselves show that there are no more moods than have been mentioned before, whether [the inference] is taken directly or conversely, so far as the truth itself permits. Their number cannot be increased beyond this.

APPENDIX B

THE APULEIAN SQUARE OF OPPOSITION

Historians of logic are agreed that, although Aristotle stated the principal logical relations between the four types of categorical proposition, he did not invent the heuristic diagram, traditionally known as the Square of Opposition, which maps those relations. This diagram has been part of the staple fare of students of elementary logic for centuries, but modern writers do not always show any certainty about its origin, or its original form. It is not uncommonly thought to be a medieval invention, or is simply glossed as 'traditional' in a way which implies either a medieval or post-medieval origin. However, Bocheński[1] and Sullivan[2] correctly locate the first known occurrence of the diagram in the *Peri Hermeneias*. Our main concern here is, therefore, with the form of Apuleius's diagram. We shall argue that the form given in our translation is the one which is licensed by the description given in P.H.V. At the end, we shall also consider whether this heuristic device should be regarded as an Apuleian invention.

Both Bocheński and Sullivan reproduce, as the Apuleian Square of Opposition, a diagram which contains non-Apuleian terminology and which runs well beyond what is licensed by the descriptive text in P.H.V, although Sullivan admits both these points. The diagrams of Bocheński and Sullivan are derived from that given by Thomas[3] in his edition of the *Peri Hermeneias*, which was in turn taken over from Goldbacher's edition[4] of 1885. We set out the Goldbacher/Thomas diagram, followed by an English version, on p. 109.

Now when Apuleius treats the relations between the four propositional forms in P.H.V, his very careful and explicit account makes it quite clear that a diagram is intended and locates its place in the text very clearly. Furthermore, the account amounts to a set of instructions on how to draw the figure and how to label the relations to be charted, as well as a description of the main features of those relations. As we have stressed in Part I, the Apuleian terminology gives every appearance of having

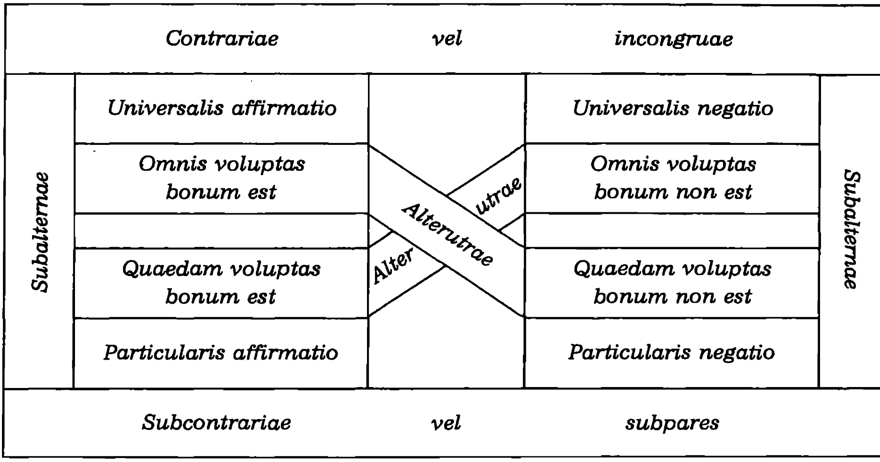
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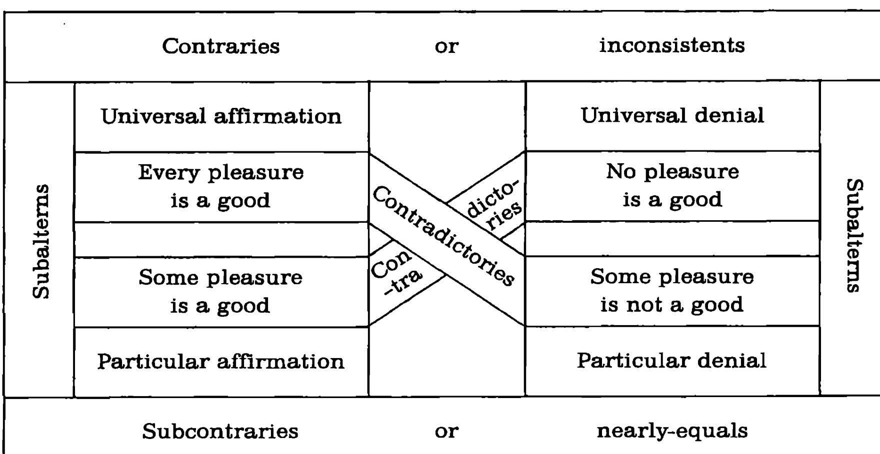
[1] I.M. Bocheński, *A History of Formal Logic*, Notre Dame 1961, pp. 140-141; also *Ancient Formal Logic*, Amsterdam 1951, p. 37, n.14.

[2] Mark W. Sullivan, *Apuleian Logic—the nature, sources, and influence of Apuleius's Peri Hermeneias*, Amsterdam 1967, pp. 64-66.

[3] Paul Thomas, *Apulei Madaurensis Opera Quae Supersunt*, Volume III: *De Philosophia Libri, Liber* ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ, Stuttgart 1970.

[4] A. Goldbacher, "Liber περὶ ἑρμηνείας qui Apulei Madaurensis esse traditur", *Wiener Studien*, VII (1885).





been chosen with great care, and that alone would provide a sound enough reason for not overlaying it with other later terminology, as in the Goldbacher/Thomas type of figure. It can be seen from their diagram that the vertical sides are labelled with *subalternae*, although Apuleius gave no special name to the relation between universal and particular of like quality—and despite the fact that this obscures the point, well-known to Apuleius, that the relation is not symmetrical. In addition, *incongruae* and *subpares* are elaborated, respectivly, to *contrariae vel incongruae* and *subcontrariae vel subpares*. (We may wonder why Goldbacher did not extend the

same treatment to *alterutrae.* Was it merely that there was no room in the middle of his already cluttered figure ?) Although Goldbacher has been followed in these points by Thomas, Bocheński and Sullivan, the additions to the Apuleian terminology clearly result in an inaccurately labelled figure. But, as well, the elaboration tends to distract attention away from the careful examination of Apuleius's own terminology and what led him to adopt it.

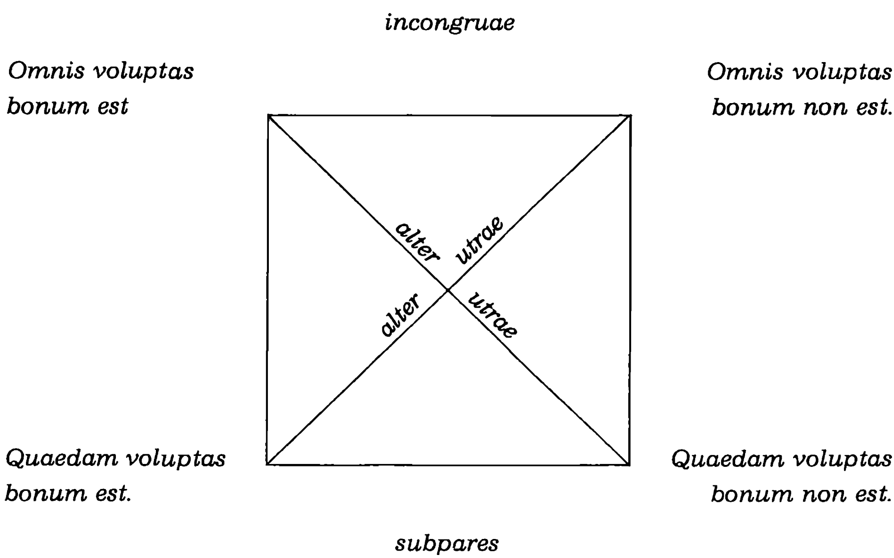
We turn now to the diagram itself, to which the labels "inconsistents" [*incongruae*], "alternates" [*alterutrae*] and "nearly-equals" [*subpares*] are to be attached. Apuleius begins P.H.V by saying that, to see how the four propositions are related, it is useful to consider them in a squared figure [*quadrata formula*], with the dedicative and abdicative universals on the top line [*in superiore linea*] and the dedicative and abdicative particulars under them on the bottom line [*in inferiore linea*]. In the course of this, the logical relations are labelled as they come up, and the nature of the relations explained. After further remarks about the conflicts or oppositions involved, and about the relations between universals and particulars of like quality, he remarks that all this is easily shown "from the very propositions written below" [*ex ipsis propositionibus ... infra scriptis*]. This remark locates the diagram precisely, as following immediately on that sentence. Different editors of the text have agreed on that location, even if not on the form of the diagram. So the figure in Hildebrand's edition[5] of 1842 differs significantly from the one given by Goldbacher and Thomas. There is room for surprise at this variation, since the text of P.H.V makes the form of the diagram absolutely clear.

It is made quite clear that the diagram has to be a square [*quadrata formula*] with its diagonals [*obliquae lineae angulares*] drawn in. The repeated used of *linea* indicates that it should be a simple line drawing; for none of the contexts of *linea* give any reason to suppose that it here means anything other than a line, such as a path. Nevertheless, Goldbacher, and to some extent Hildebrand, drew the Apuleian figure as a diagram of pathways—a common enough practice in later representations of the Square of Opposition. The four propositional forms (or, according to Apuleius's practice, representative examples) are to be written at the four corners of the square. We are told that the two universals are to be written *in superiore linea*, each with its corresponding particular below it *in inferiore linea*. The propositions must be placed at or near the extremes of the upper and lower lines since we are instructed to draw one diagonal from the universal dedicative to the particular abdicative, and the other

[5] G.F. Hildebrand, *L. Apuleii Opera Omnia*. Pars II: *De Dogmate Platonis Philosophi*, *Liber III. De Philosophia Rationali sive* ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ, qui Apuleio falso tribuitur, Leipzig, 1842. [Reprinted, Georg Olms, Hildesheim 1968.]

from the particular dedicative to the universal abdicative. Each of the terms *incongruae*, *alterutrae* and *subpares* is introduced in connection with mention of a line in the squared figure, which suggests that Apuleius intended them to appear in the diagram, and also locates them in it.

We need only to take all these indications seriously, for the following diagram to emerge, matching the one we have inserted in the *Peri Hermeneias*.



Finally, we address the question whether the diagram can be regarded justly as an Apuleian invention, or whether it is merely something which Apuleius took from the existing logical tradition. Certainly, no earlier version of it is known in either Greek or Latin texts. Its absence in Galen's *Institutio Logica*, which we can take as a roughly contemporary Greek handbook, suggests that it was not an established feature of the teaching of logic in the Greek schools. Although we cannot simply dismiss the possibility that Apuleius picked it up from one of his Greek teachers, it seems likely that once used it would have become widely known—especially when one considers its extreme popularity in later centuries.

If we consider the care with which Apuleius describes the diagram and instructs us how to construct it, it is hard to avoid the conclusion that the author is conscious that what he is presenting is something of a novelty and certainly not something familiar in all the schools. But something may turn on how one takes the phrasing of his introduction of the whole

topic. Apuleius says that "it is *non ab re* to consider them [i.e., the four propositions] in a squared figure". We have taken *non ab re* in the positive sense of "useful", which is quite consistent with the introduction of a novel heuristic device. If one were to take it less positively (say, as "not irrelevant"), then it might be more consistent with his giving the Apuleian stamp of approval to something already in use, though it would hardly force one to that conclusion.

Given the lack of definite evidence to the contrary, we see no reason for withholding the credit for the invention of the Square of Opposition from the author of the *Peri Hermeneias*. It is, after all, just the kind of heuristic device that one would expect to be invented by the lively-minded author of such a textbook.

APPENDIX C

APULEIUS AND THE "MOODS OF THE STOICS"

In P.H.VII, Apuleius sets out a definition of a collection which follows Aristotle's definition of a syllogism, but goes further than Aristotle by giving a series of explanatory glosses on the successive parts of the definition. In two of these glosses, Apuleius's remarks are directed entirely at Stoic forms of argument. Taken together, these remarks are extremely difficult to understand or interpret in any sensible and consistent fashion; and some of the remarks are puzzling and obscure when taken individually.

The first gloss, dealing with the question whether a collection must have more than one acceptance, is quite straightforward if one takes it alone. Antipater of Tarsus, a Stoic of the second century B.C., had claimed that certain single-premissed arguments, such as *You see, therefore you live*, are complete as they stand. Apuleius makes the quite correct point that this is a complete inference [*plena conclusio*] only if we supply a suppressed conditional premiss, so that the inference becomes: *If you see, you live*; *but you see, therefore you live.*

There is no problem about this Apuleian move taken by itself, but problems do arise as soon as we take it together with the second gloss. For, in his move against Antipater, Apuleius has committed himself to the view that the first undemonstrated inference scheme of the Stoics is a valid inference form; yet this seems to be something which he denies a few lines later. He is committed because a *collectio vel conclusio* is defined as a set of acceptances together with a conclusion which follows from them by necessity. So a *plena conclusio* must be a *valid* inference; and Antipater's argument, when filled out to be *plena*, is an example of the first Stoic undemonstrated scheme.

We now need to turn to the second gloss, which opens with the remark:

> ... because we want to conclude not what has been conceded to us but what has been denied, so in the definition he [Aristotle] said: *something other, beyond those which have been conceded, follows by necessity.*

The whole of this gloss, which runs down to the point that a collection is not an inductive inference, is more concerned to attack the Stoics than to defend or explain the relevant part of the definition. Furthermore, the expression is occasionally so muddy and the thought so confused that one might wonder whether the Apuleian text has been subject to tampering

by other hands, but neither the vocabulary nor the general style of writing lends any support to such a conjecture. For the purpose of giving some analysis of the passage, we shall take it in two stages. In the first stage, Apuleius rejects as superfluous [*supervacanei*] those Stoic inferences which are alleged to "infer what is conceded spontaneously without dispute". In the second, he appears to be mounting an attack on the first undemonstrated scheme of the Stoics—i.e., on the first axiomatic form of the Stoic logical system.

The inferences explicitly rejected in the first stage are, in Apuleius's wording:

(a) *Either it is day or night; but it is day.*
(b) *If it is day, it is day; therefore it is day.*

Each of these is elliptical, and when filled out they become:

(a') *Either it is day or it is night; but it is day, therefore it is not night.*
(b') *If it is day, it is day; but it is day, therefore it is day.*

Both of these are said to "infer what is conceded spontaneously without dispute" which makes it quite clear that Apuleius is thinking of the arguments as advanced in a disputatious context rather than fastening on their formal aspect. To that extent, we might take him to be criticising the Stoic forms from a utilitarian rather than from a logical standpoint. But since the remarks purport to be a gloss on a part of the definition of a collection, there is also a presumption that he is saying that these arguments are not genuine collections, which would suggest that he is finding logical fault with them. Furthermore, while (b') merely repeats its second premiss in the conclusion, which certainly lays it open to utilitarian objection, the case is quite different with (a'). In fact, to mount a utilitarian objection to (a'), Apuleius has to come dangerously close to admitting as satisfactory a single-premissed inference:

It is day, therefore it is not night

(which he can hardly do in view of his move against Antipater).

There is no doubt that this is meant to be a serious attack on Stoic logic. The first of the arguments rejected is one of the undemonstrated inference schemes (viz., the fourth). The second is an example of a 'duplicated' argument, containing a conditional premiss whose antecedent and consequent are identical—and it was a not uncommon ground for criticism of the Stoic logicians that they regarded such arguments as valid. Further, Apuleius shows, in his transition from the first to the second stage of the gloss, that he was not unaware that this duplicated argument is a special case of the first undemonstrated scheme. It seems likely

that the nature of the attack, as utilitarian or logical, was meant to be revealed to the reader in the opening sentence of the passage:

> On account of this [*quapropter*], those moods of the Stoics which accomplish what is not the same in a different manner [*non idem differenter peragentes*] are superfluous.

The opening phrase must mean that the Stoic moods breach the provision of the definition which has been quoted immediately before this sentence, which suggests that Apuleius thinks that they are not genuine collections at all, and not merely genuine but useless ones. But the nature of the fault is presumably spelt out in the muddily obscure expression, *non idem differenter peragentes*. We have translated this by taking the negative particle *non* as attached in the usual way to what follows immediately after it—"which accomplish what is not the same in a different manner". If this is correct, then perhaps what Apuleius means is that these moods *do* reach a conclusion which is not the same as either of the premisses, but that nevertheless they do not satisfy the provision of the definition, or are *supervacanei* in some other sense. (We would then have to take it that *differenter* means that they reach their conclusions in a way which differs from the way an assertoric syllogistic collection reaches its conclusion.) However, this is hardly a satisfactory interpretation, since one of his examples has a conclusion which is the same as a premiss and the other does not. The same difficulty besets any attempt to take *non* with *peragentes*—"which do not accomplish what is the same in a different manner". Nor is any real help forthcoming if we use any other available sense of the verb *peragere*. There seems to be no way of taking this expression which will make sense and square with what precedes and follows it, and so the diagnosis of the fault which it presumably expressed remains totally obscure.

The transition to the second stage of the gloss is marked by:

> That is rather like the case [*illud potius verisimile est*] when I say: *If it is day, it is light*; *but it is day, therefore it is light*, which does not infer beyond what I have accepted [*non male colligere, praeter quod accepi*].

The subject of discussion is now the first undemonstrated scheme of the Stoic system; and the opening words of this sentence link the first undemonstrated scheme and the duplicated argument, the latter being "rather like" the former by being a special case of it. The grammatical basis for asserting that the opening makes this link is that *illud* should refer to something more remote than the general remark in the immediately preceding sentence (for which we would expect *hoc* rather than *illud*); and the next item back is the duplicated argument. It is possible, of course, that *illud* refers to the former *of the two arguments* quoted

a little earlier—i.e., to the example of the fourth undemonstrated form rather than to the duplicated argument. However, it does not seem at all unlikely that Apuleius saw that, just as a form of argument is to be rejected as invalid if any instance of it fails, so it is to be rejected if any special form of it is rejected. The duplicated argument has the form:

(a) If the first then the first; but the first, therefore the first.

The first undemonstrated argument has the form:

(b) If the first then the second; but the first, therefore the second.

Since (a) can be obtained by uniform substitution of "the first" for "the second" in (b), it is clear that (a) is a special case of (b). So, since Apuleius had already rejected the duplicated argument, he should also reject the Stoics' first undemonstrated argument. If Apuleius did see that he was committed in this way, it would explain both why he seeks to refute the latter argument and also, perhaps, the somewhat strained nature of his argument.

The argument is strained both in its detail and in containing two incompatible strands. Overall, one is left with the impression that the author tried one line of argument, felt that it had not really succeeded, and so tried the opposite tack, only to tail off rather lamely again. The two successive strands are incompatible because the first one claims that the conclusion *it is light* is in the premisses, while the second strand claims that it is not.

The first strand (of the second part of the gloss) begins with the sentence quoted earlier. The whole of this strand runs thus:

> That is rather like the case when I say: *If it is day, it is light*; *but it is day, therefore it is light*, which does not infer beyond what I have accepted [*non male colligere, praeter quod accepi*]. For what is in the conclusion, *it is light*, was also in the premiss.

Our understanding of this passage is not helped by an unfortunate corruption in the text, affecting *non male colligere* which has been read variously by different editors. However, the second sentence makes it quite clear what move is being made, and we have been guided by this in translating the corrupt passage. (In fact, we have translated it very much as if it read *non aliud colligere*, which was Meiss's preferred reading.)

The argumentative move is transparently faulty. Although the conclusion *it is light* is to be found *in* the premisses it is not *one of* the premisses, since to assert a conditional is not thereby to assert its consequent. Apuleius can hardly have been unaware of this point, since in P.H.II he remarks about the assertion *He who reigns is happy*, *if he is wise* that "you set a condition, according to which he may not be happy unless he is

wise''. We can presume that it was consciousness of the fact that his first strand failed to make his point that led him to try the opposite tack in the second strand.

The second strand in the second gloss is announced as an attempt to refute the first undemonstrated argument. The attempt amounts to the claim that, although the words ''it is light'' occur in both a premiss and the conclusion, they mean different things in the two places. The reader is presumably to conclude that the argument is therefore invalid. Once again, the Apuleian argument is transparently faulty, although it is a little more subtle than the argument in the first strand.

Apuleius puts his argument in this way:

> ... it is said in one way in the conclusion, *therefore it is light*, in order that it be shown that it is now light, but it was accepted in another way in the premiss, in which it was not said that it is now light but only that it is a consequence that if it were day, then it would be light. But it matters a lot whether you affirm that something is now the case, or only that it is usually the case when something else has preceded it.

The second sentence adds nothing to the point made in the first, and has all the appearance of an uninspired tail-piece designed to persuade the reader to accept the lame argument that precedes it. The main move is to say that the conditional premiss, which is stated using only the indicative mood, was ''accepted'' as a subjunctive conditional. But even if we were to rewrite the conditional as an explicitly subjunctive conditional, the addition of the second (indicative) premiss, *It is day*, will give us the indicative conclusion, *It is light*. That is, if we rewrite the first undemonstrated argument as Apuleius interprets it, viz.: *If it were day it would be light*; *but it is day*, *therefore it is light*, the conclusion still follows from the premisses, and the argument is not refuted by the Apuleian move against it.

In conclusion, we must face the problem of explaining why this attack on aspects of Stoic logic appears where it does, in the middle of the explanation of a definition taken over from Aristotle. Furthermore, given that the attack is on the whole very badly handled—the second gloss must surely be the worst passage in the whole of the *Peri Hermeneias*—we have the problem of seeing why it was inserted at all.

In Chapter 4 of Part I, we suggested, in a very conjectural way, that this passage may point to Apuleius's having seen that the Aristotelian definition applies better to deductive inference in general than it does to the assertoric syllogism. That is, if Apuleius intended his concept of a collection to embrace more than the Aristotelian assertoric syllogism, it would be intelligible that he should use examples from other parts of logic to illustrate and explain the definition of a collection. This might explain

the appearance of the single-premissed arguments of Antipater in the first gloss. But it would hardly explain the wild and mishandled attacks of the second gloss, which do little or nothing to illuminate the relevant provision of the definition, although the duplicated argument could have been treated in a way which would have done so.

Perhaps the nearest we can come to explaining the occurrence of these attacks on Stoic logic is by pointing to the Peripatetic habit of denigrating Stoic logic.[1] The Peripatetic denigration of Stoic logic as superficial, useless and unnecessary suggests that they saw it as a rival, rather than as a complementary, logical system; and such a view, ridiculously mistaken though it is, would lead very easily to attempts to undermine its foundations. A very good way to achieve this would be to show, or try to show, that its fundamental forms of inference—especially the undemonstrated forms—were defective in some way. It would hardly be surprising if such attempts, once undertaken, turned into wild and poorly handled attacks.

Peripatetic criticism of Stoic logic is to be found later than Apuleius in Alexander of Aphrodisias (fl. early 3rd century A.D.), in his commentaries on Aristotle.[2] Alexander's targets included the single-premissed arguments, the duplicated arguments and the first undemonstrated argument. We suggest that Apuleius's attacks in P.H.VII (as well as his remarks on negation in P.H.III, which had rather more point for his exposition) are simply a part of this Peripatetic tradition. Their appearance in P.H.VII would then have to be seen as an attempt to preserve the Aristotelian syllogism as the only proper kind of deductive inference. We must admit, of course, that, if this is correct, it would count against our conjectural suggestion that the Apuleian collection was a wider concept than the Aristotelian syllogism.

[1] Benson Mates, *Stoic Logic*, Berkeley 1973, *passim* and esp. pp.66, 86.

[2] A selection of relevant portions of Alexander's commentaries on Aristotle's *Topics* and *Prior Analytics* are translated in Mates, *op. cit.*, pp. 125-127.

SELECTIVE INDEX

Bold page numbers (e.g., **75**) refer to pages in the Apuleian Glossary (Appendix A). Roman numerals refer to sections of the Latin text and the translation. The selectivity of the index is nowhere more apparent than in the latter references, which are generally restricted to the first or most significant occurrence of the relevant term. "*Peri Hermeneias*" is abbreviated to "*P.H.*", and, in subentries, "Apuleius" to "A".